THE IMPACT OF LANGUAGE INTERVENTION ON AT-RISK KINDERGARTEN AND FIRST-GRADE STUDENTS' RECEPTIVE AND EXPRESSIVE VOCABULARY: A QUANTITATIVE, QUASI-EXPERIMENTAL STUDY

by

Kimberly Q. Entzminger

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This quantitative, quasi-experimental, pretest-posttest, non-equivalent control group study examined the effect of specific language-based interventions on accelerating the receptive and expressive vocabulary development of kindergarten and first-grade students. Though language comprehension is essential for reading comprehension, few studies offer insight into identification and intervention for students who enter kindergarten and first grade without age or grade-appropriate vocabulary development. The study included 70 students from a Title One school in South Carolina, divided equally into control and intervention groups after initial screening using the Peabody Picture Vocabulary 5th edition and the Expressive Vocabulary Test 3rd edition. Standard scores were used to determine placement into the Story Champs language intervention program. Data was analyzed using two separate one-way analyses of covariance. A comparison of posttest results showed a statistically significant difference between the intervention and control groups, providing evidence that specific language-based interventions can effectively accelerate young students' vocabulary development. The study contributes to the advancement of the field by providing insight into potentially effective interventions for students with vocabulary deficits in kindergarten and first grade. Future research could include tracking students over time, increasing the diversity of students in the study, and using a larger sample size. Professional development for teachers was identified in prior studies as important to student achievement, so future studies could also examine teacher's understanding of age-appropriate language and vocabulary development as well.

Keywords: vocabulary development, intervention, at-risk, decoding, language comprehension

Dedication

This dissertation is dedicated to my family, whose unwavering support has allowed me to pursue my goals. Without their encouragement, love, and patience, I would never have undertaken this journey. A special dedication to my husband, Robert, for his support throughout this journey and every other endeavor during our 35 years of marriage. He is my best friend, rock, and shelter in every storm. Your encouragement and support mean the world to me.

To Brittany, Conner, Josh, Maddison, Sebastian, and Theo, my amazing children, and grandchildren. I hope I have equipped you with the belief that you can achieve your dreams. You are the inspiration for all that I do. Never stop believing that if you dream big and work hard you can achieve anything.

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There are many people who have influenced and shaped my life, allowing me to fulfill my dream. I have often said that the fact that I am a teacher proves God has a sense of humor. I was the child who hated school and never thought that I would end up a teacher. He clearly had a plan and for that I am forever grateful. A special acknowledgment to Dr. Svirska-Otero and Dr. Keafer for their encouragement, feedback, and support. They have been invaluable in my ability to complete this journey.

I must also acknowledge my family, including my parents, siblings, husband, children, and in-laws, all of whom rally around in support of me and each other. Sharing the load, helping with children and grandchildren, and being available and supportive. I was fortunate to be born into a family who encouraged me to dream big and believed that I could do anything. I could not have done this without them.

In addition, I have had the honor of working for administrators who supported and encouraged me throughout my career. I also have the privilege of working with an amazing group of teachers, support staff, and students who inspire me every day. It is truly a blessing to be able to do a job you love, with people you love, in a place that you love, every day. I am blessed beyond measure. I would not have made it through 21 years as an educator without the support I get from them daily.

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List of Abbreviations

Clinical Evaluation of Language Fundamentals Preschool, 2nd edition (CELF-2)

Enhanced Moved by Reading to Accelerate Comprehension in English (EMBRACE)

English language Learners (ELL)

Expressive Vocabulary Test, 3rd edition (EVT-3)

Functional Magnetic Resonance Imaging (fMRI)

Growth Scale Values (GSV)

Kaufman Test of Educational Achievement, 3rd edition (KTEA-3)

Language Essentials for Teachers of Reading and Spelling (LETRS)

Languages Other Than English (LOTE)

Learning Disabilities (LD)

Literacy Assessment Portfolio (LAP)

Mississippi Department of Education (MDE)

National Assessment of Educational Progress (NAEP)

National Association for the Advancement of Colored People (NAACP)

National Center for Educational Statistics (NCES)

National Reading Panel (NRP)

Peabody Picture Vocabulary Test, 3rd edition (PPVT-III)

Peabody Picture Vocabulary Test, 4th edition (PPVT-4)

Peabody Picture Vocabulary Test, 5th edition (PPVT-5)

Science, technology, engineering, and math (STEM)

South Carolina Department of Education (SCDE)

CHAPTER ONE: INTRODUCTION

Overview

The purpose of this quantitative, quasi-experimental, pretest-posttest, non-equivalent control group study was to examine the effect of specific language-based interventions on accelerating the language proficiency of kindergarten and first-grade students identified as having deficits in this area. Chapter One provides background regarding the impact of language on a child's literacy development. The background includes an overview of this study's theoretical framework, the impact of illiteracy on society at large, and the historical background. The problem statement discusses the gap in the literature. The purpose statement is followed by the significance of the current study and the research questions. The chapter concludes with a list of key terms and their definitions.

Background

According to the National Center for Education Statistics (NCES; 2022), literacy outcomes for most students are established in elementary school, as statistics gathered over more than four decades indicate that there is an 80% likelihood that students will remain on the same percentile curve in tenth grade as in fourth grade. This trajectory is alarming, considering that data collected from the National Assessment of Educational Progress (NAEP, 2022) indicates that only 34% to 36% of students in the United States read proficiently at the end of fourth grade. To address these issues, current movements across the United States are calling for changes in how schools teach reading, moving away from balanced literacy to structured literacy to ensure scientifically based methods of reading instruction are implemented to boost the achievement of all students (Castles et al., 2018).

Balanced literacy has been the predominant method for teaching reading since the early 2000s when whole language proponents sought to include phonics instruction based on the National Reading Panel Report (National Reading Panel [NRP], 2000). Balanced literacy grew directly out of the whole language movement of the 1960s, where reading was compared to a psycholinguistic guessing game in which readers use meaning, structure, and visual information to read text (Castles et al., 2018; Dewitz & Graves, 2021; Goodman, 1996). In contrast, the simple view of reading theory developed by Gough and Tunmer (1986) states that word recognition multiplied by linguistic comprehension equals proficient reading (Lorimor-Easley & Reed, 2019). The simple view of reading contrasts the three cues used in the theory of whole language and balanced literacy. In the simple view of reading, both decoding and language comprehension are equally crucial for reading development, while balanced literacy assumes that meaning and structure are preexisting upon school entry and can be used to facilitate decoding (Apel, 2021; Clay, 2016; Gough & Tunmer, 1986).

The move to the science of reading has resulted in legislation focused on ensuring scientifically based reading instruction is taking place in schools across the United States, and recent addendums to the South Carolina Read to Succeed Act have altered the wording from evidence-based practices to practices based on the science of reading (South Carolina Department of Education [SCDE], 2022). Considering research indicating that language proficiency in early childhood is a strong predictor of reading comprehension and considering the gaps that exist between children from differing backgrounds, the need to assess language early and intervene appropriately is critical to the long-term success of students (Duff, 2019; Janssen et al., 2019). Although efforts to identify students at-risk for reading comprehension difficulties focus on vocabulary and oral language development in second grade and beyond,

there is compelling evidence that very few early childhood settings provide adequate support in this area (Duff, 2019; Janssen et al., 2019; Kelley et al., 2020; Schmitt et al., 2017). If educators are to ensure that all students have the skills needed to be successful in school and beyond, then it is critical to understand and facilitate language development, including vocabulary, from the earliest possible moment. The cost of waiting to address vocabulary deficits until second grade or later is unlikely to correct the core issue of language comprehension in ways that ensure students can understand what they read, which is the other critical component of the simple view of reading (Gough & Tunmer, 1986).

Historical Overview

The most effective method of teaching children to read has been hotly debated since the 1960s when whole language proponents advanced a theory stating that by immersing students in high-quality children's literature, reading would develop the same way as language (Petscher et al., 2020). Whole-language supporters dismissed phonics or systematic instruction in favor of whole-word memorization (Kilpatrick, 2015). In 1997, the National Reading Panel was formed to examine classroom practices nationwide and review evidence-based strategies to determine the most effective way of teaching children to read (Goldberg & Goldenberg, 2022; NRP, 2000). The panel identified five critical components of effective literacy instruction. Those five areas, often called the five pillars of literacy, are phonemic awareness, phonics, fluency, vocabulary, and comprehension instruction (Lorimor-Easley & Reed, 2019; NRP, 2000). This report forced many educators and policymakers to move from whole language to balanced literacy (Spear-Swerling, 2018; Webster, 2021).

After the National Reading Panel Report (2000) was published, schools and educational publishers began promoting an approach called balanced literacy (Lorimor-Easley & Reed,

2019). Balanced literacy was seen as combining whole language with phonics instruction (Goldberg & Goldenberg, 2022; Lorimor-Easley & Reed, 2019). However, the move to balanced literacy still had a significant hurdle to overcome, as whole language is based on a faulty premise (Shaywitz & Shaywitz, 2020). In question is the belief that learning to read is as natural as learning to speak (Dehaene, 2009; Shaywitz & Shaywitz, 2020). Brain research conducted since the 1980s indicates that while humans are hard-wired for speech and communication, they are not hard-wired for reading (Dehaene, 2009; Kilpatrick, 2015). There are no reading systems in the brain, and to read, a person must rewire the brain, connecting regions associated with recognition, naming, and language (Dehaene, 2009; Kilpatrick, 2015; Spear-Swerling, 2018). Proponents of balanced literacy saw this instructional approach as combining high-quality children's literature with some phonics instruction and make balanced literacy fit the model described in 2000 by the National Reading Panel (Lorimor-Easley & Reed, 2019). However, the balanced literacy approach has yet to improve reading scores in the United States, indicating that the approach is unsuccessful (NAEP, 2022).

Society-at-Large

Public education creates an educated citizenry capable of fulfilling the demands of a democracy. Of significant importance is the ability to read and write proficiently, as the issue of illiteracy has an enormous impact on society. Statistics from the Governor's Early Literacy Foundation (GELF, 2022) indicate that 85% of juveniles who enter the juvenile justice system are functionally illiterate. Two-thirds of fourth-grade students who do not read proficiently end up in jail or on welfare (NCES, 2022). More than 70% of incarcerated males in America cannot read above a fourth-grade level. In addition, students who do not read proficiently in fourth grade are more likely to drop out of school, exhibit behavioral difficulties, become teenage parents,

have less access to health care, and a host of other issues associated with poverty throughout their life spans. Without the ability to read and understand what is being read, students are disadvantaged in all aspects of life. These statistics set a troubling trajectory as research indicates that reading proficiency will unlikely change after the third grade (GELF, 2022). While this number is abysmal in and of itself, subgroup statistics show troubling differences between students.

While the National Assessment of Educational Progress (NAEP, 2022) scores showing the number of fourth-grade students reading at grade level in the United States remain stagnant, an examination of sub-groups indicates significant inequities in achievement. A 2017 lawsuit against the state of California charged that officials knew they were failing students but did not change their practices to align with scientifically based reading instruction (Goldberg, 2022; NAEP, 2022). This action was predicated on the fact that the scores of Black males indicated that only 16% to 18% of those students read proficiently (NAEP, 2022). This resulted in a 53-million-dollar settlement awarded to the 75 lowest-performing schools in the state to provide professional development for teachers and ensure that structured literacy and early identification of students at-risk for learning difficulties were addressed in these schools (Goldberg, 2022; NAEP, 2022). When these statistics are considered, the importance of early instruction becomes obvious (GELF, 2022; NAEP, 2022). Educators must consider historical approaches to early literacy development and learning theories to change this statistic.

Theoretical Background

It is essential to examine the theorists recognized as experts in the early childhood educational community as their theories offer insight into how children mature and develop and can aid in making instructional decisions that benefit students. Piaget (1951), Vygotsky (1930-

1934/1978), Bruner et al. (1956), and Hill (2019) have all contributed to the understanding of child development and offer insight into the type of instruction that could accelerate student learning.

Jean Piaget (1951) created a system of classifying human development based on observations of children. He observed that children passed through various stages of development that typically occurred in two-year bands (Piaget, 1951; Piaget & Inhelder, 2000). These developmental levels are marked by specific skill acquisition from birth to adulthood. Piaget believed children create categories or schema in the brain. Schema is based on creating categories of meaning in the brain, and vocabulary plays a critical role in the creation of schema (Piaget, 1951). When a child learns something new, the child either integrates the latest information into an existing category or creates a different category for the information. Based on this theory, the more background knowledge or schema a child possesses, the easier it will be to integrate new learning (Piaget & Inhelder, 2000). One of the most critical tenets of Piaget's theory is that advancements in a child's language indicate growth in the ability to think logically and problem-solve.

Lev Vygotsky's 1930 social learning theory was published in English in 1978 and asserted that learning happens as humans interact socially. Vygotsky believed teachers were critical in guiding students to higher levels of understanding and that language formed the foundation for all learning (Vygotsky, 1930-1934/1978). He also theorized that reading, writing, and thinking were all related to a person's language. Vygotsky's (1930-1934/1978) theory, like Piaget's (1951), indicates that increases in language development signal growth in cognition.

Vygotsky (1930-1934/1978) identified inner speech as a different concept from social speech and as a critical component in cognitive development. Inner speech is an internal

monologue that results from the need to problem-solve or think critically. Vygotsky also postulated the zone of proximal development, where a learner can complete a task with help from a more capable person.

Bruner et al. (1956) expanded on this theory by introducing the term scaffolding, which is what teachers or more able peers do to assist the child in completing a task in their zone of proximal development. Since communicative speech or social speech develops first, early language development through scaffolding is critical to the development of inner speech, which represents an advancement in cognition (Bruner et al., 1956; Vygotsky, 1930-1934/1978). Since reading aims to make sense of the message, understanding the development of both language comprehension and word recognition is critical to reading instruction.

For children to learn to read, systems in the brain designed for visual recognition, sound discrimination, and creating categories of meaning, or schema, must be wired together in ways that were never intended by nature (Dehaene, 2009; Kilpatrick, 2015; Piaget, 1951). To facilitate the creation of a robust processing system, teachers must understand how children develop and learn during the pivotal early childhood years. By understanding the tenants of cognitive development, social learning theory, and instructional strategies that facilitate reading and language development in young children, teachers are more likely to assist all students in achieving reading proficiency (Apel, 2021; Archer & Hughes, 2011; Bouchrika, 2024; Coyne et al., 2022; Dehaene, 2009; Kilpatrick, 2015).

Problem Statement

For children to become proficient readers, they must be able to decode or read the words on the page and understand what those words mean (Spear-Swerling, 2018). According to the simple view of reading, word recognition times linguistic comprehension equals skilled,

proficient reading (Apel, 2021; Spear-Swerling, 2018). If a child can decode effectively, then this theory indicates that the child's reading comprehension will be equivalent to the child's listening comprehension (Spear-Swerling, 2018). While most reading interventions in the primary grades focus on decoding, language or linguistic comprehension is typically not addressed until students reach upper elementary school unless the child is an English-language learner or so severely language impaired that an Individualized Education Plan (IEP) is needed (Dolean et al., 2019; Shaywitz & Shaywitz, 2020). Addressing language comprehension in the primary grades is necessary to close the vocabulary gaps between historically underachieving subgroups and ensure all students become proficient readers (Dolean et al., 2019; Hill, 2019). While this vocabulary gap is well known, very few intervention programs focus on vocabulary development for students who do not speak a language other than English or have not been identified as having a language-based disability (Justice et al., 2019; Levine et al., 2020).

The lack of daily vocabulary, including essential naming words, is prevalent in most early childhood settings that serve students from low socioeconomic backgrounds (Dolean et al., 2019). This lack of vocabulary makes it difficult for students to process, link, and retain information (Hill, 2019). Since language forms the basis for learning (Hill, 2019) and is evidence of cognitive development (Piaget & Inhelder, 2000), every aspect of a child's educational experience is rooted in the child's ability to process language.

Universal screening measures currently used in South Carolina and many other states identify students with difficulty in rapid naming and phonemic awareness, two critical precursors to reading (Dewitz & Graves, 2021; Dolean et al., 2019). However, there is no universal screening measure for young children in language development that would identify low levels of vocabulary knowledge and provide insight for teachers to address this side of the simple view of

reading equation (Snowling & Hulme, 2021). The existing research has examined the language differences between students at the preschool level and those students identified as having a language-based disability (Dolean et al., 2019; Snowling & Hulme, 2021). However, there is limited information concerning students entering kindergarten and first grade who only speak English and do not qualify as students with a language disability but still exhibit levels of receptive and expressive English vocabulary below age and grade level expectations (Dewitz & Graves, 2021; Dolean et al., 2019).

While vocabulary deficits are highly predictive of reading difficulties, particularly reading comprehension deficits, studies on the efficacy of small-group language intervention early in a child's academic career are much less prevalent than studies on rapid automatized naming and phonemic awareness (Dolean et al., 2019). Most early intervention programs and universal screening tools focus on assessing and tracking improvements in phonemic awareness and rapid automatized naming rather than language and vocabulary development. The problem is that more empirical research is needed on the efficacy of intervention programs directed to oral language deficits regarding expressive and receptive vocabulary in kindergarten and first-grade students to ensure that the language comprehension part of the simple view of reading equation is addressed. This instruction will ensure that students can read the words on the page and understand their meaning (Snowling & Hulme, 2021).

Purpose Statement

The purpose of this quantitative, quasi-experimental, pretest-posttest, non-equivalent control group study was to examine the effect of specific language-based interventions on accelerating the receptive and expressive vocabulary proficiency of kindergarten and first-grade students identified as having deficits in this area. In this study, the independent variable will be

participation in the language intervention program Story Champs (Language Dynamics Group, 2019; Spencer & Peterson, 2018), an evidence-based language intervention for pre-kindergarten to third-grade students that provides lesson plans and materials for targeted language intervention in basic story structure, informational text structure, language complexity, vocabulary, and written expression in whole class or small group settings (Spencer & Peterson, 2018). The first dependent variable will be receptive vocabulary standard scores on posttests of the Peabody Picture Vocabulary Test 5th edition (PPVT-5), which defines receptive language as all the language heard and understood by the individual (Dunn, 2019). The second dependent variable will be posttest standard scores on the Expressive Vocabulary Test 3rd edition (EVT-3), which assesses expressive language, defined as all the words an individual uses to convey meaning (Williams, 2019). These tests are typically combined to assess overall language and vocabulary proficiency (Dunn, 2019; Williams, 2019). The covariate in this study will be pretest standard scores to control for initial differences between the control and experimental groups (Dunn, 2019; Warner, 2021; Williams, 2019). The target population for this study was kindergarten and first-grade students who scored below the standard score of 85 on the two assessments but did not receive supplemental instruction as students with identified language-based disabilities requiring an IEP. A convenience sample was chosen from a Title 1 elementary school with a 71% poverty index in a suburban setting in western South Carolina.

Significance of the Study

Early learning sets the stage for later academic achievement (Castles et al., 2018; Dewitz & Graves, 2021; Dolean et al., 2019). Universal screening measures and early intervention are prevalent in many early childhood settings; however, these typically focus on rapid automatized naming and phonemic awareness, two important precursors for decoding (Apel, 2021; Castles et

al., 2018; Spear-Swerling, 2022). However, language comprehension is equally essential, as language comprehension is the best predictor of continued reading achievement once decoding has been solidified (Apel, 2021; Francis et al., 2018; Lorimor-Easley & Reed, 2019; Nation, 2019). The lack of screening measures and definitive protocols for assessing and addressing language differences in students may be due to the prevalence of the balanced literacy model, which asserts that the meaning and structure of language develop first and are preexisting upon school entry, allowing them to be used to facilitate decoding (Fountas & Pinnell, 2022). However, this is not true for many children, including those whose first language is not English and children of poverty (Jones et al., 2019; Justice et al., 2019; Levine et al., 2020; Mancilla-Martinez et al., 2020).

Research studies indicate that early childhood environments do not close the language gap, and the few studies related to the feasibility and effectiveness of language interventions in early childhood have yielded inconclusive results (Coyne et al., 2022; Dolean et al., 2019; Duff, 2019; Gallagher et al., 2019; Janssen et al., 2019). There are no universal screening measures or targeted interventions for students below second grade who struggle with comprehension because of language proficiency, nor is there a standardized way to identify these students and ensure progress is being made (Apel, 2021; Dewitz & Graves, 2021; Duff, 2019; Spear-Swerling, 2022). As with decoding issues or the potential for decoding issues, early childhood educators need a way to assess vocabulary knowledge and access to programs that target this area of reading development. Waiting until second or third grade and trying to teach students academic vocabulary is ineffective (Apel, 2021; Dewitz & Graves, 2021). This dissertation research could assist in developing a protocol for vocabulary and language screenings and interventions to ensure that both areas of the simple view of reading are being addressed and that

students are equipped to not only decode the words on the page but also understand the message, which is the goal of reading instruction (Spear-Swerling, 2022). The feasibility of identification and intervention will be examined at the very least.

Research Questions

RQ1: Is there a statistically significant difference in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest scores?

RQ2: Is there a statistically significant difference in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest scores?

Definitions

1. *Agglutinative language* – A language that relies on the joining of morphemes (units of meaning) to create understanding, typically involves using prefixes and suffixes combined with root or base words (Kargin et al., 2022).
2. *At-risk* – A term often used to describe groups of students or individual students who may have a higher probability of academic difficulty or dropping out of school due to circumstances such as transiency, homelessness, health issues, domestic violence, low test scores, learning disabilities, discipline problems, or other adverse factors that impede students' ability to be successful in academic settings (Glossary of Educational Reform, 2023).
3. *Balanced literacy* - An approach that balances explicit instruction with independent learning opportunities (Lorimor-Easley & Reed, 2019).

4. *English-language learners (ELLs)* - Students who come from non-English speaking backgrounds and typically require modified or specialized instruction in the English-language and academic courses because they are not able to learn effectively or communicate fluently in English (Glossary of Educational Reform, 2023).
5. *Expressive vocabulary* – The words used by an individual to express ideas, thoughts, concepts and convey meaning (Williams, 2019).
6. *Functional magnetic resonance imaging* – A form of magnetic resonance imaging in which activity in the brain can be observed based on stimuli (University of California San Diego Center for Functional Magnetic Resonance Imaging, 2023)
7. *Individualized Education Plan (IEP)* – A legal document outlining the services that must be provided to a student with a disability or impairment that significantly alters their ability to access the curriculum without specialized instruction and accommodations (South Carolina Department of Education (SCDE), 2022).
8. *Inner speech* – an internal monologue that results from a need to problem solve and indicates advancement in cognitive development (Vygotsky, 1930-1934/1978).
9. *Language Essentials for Teachers of Reading and Spelling (LETRS)* – A program designed to teach elementary administrators and educators the skills needed to master and teach foundational literacy in both reading and writing (Moats, 2003).
10. *Language proficiency* – How well a person has mastered a language (Nation, 2019).
11. *Learning disability* – A disorder usually found in school age children of average to above average intelligence that is characterized by difficulty using or understanding written and/or spoken language that may be related to slowed or impaired development of perceptual motor skills (Moats, 2003).

12. *Morphology* – The study of the meaning of words in a particular language, including derivations and inflections (Hougen & Smartt, 2012).
13. *Morphophonemic* – A term used in linguistics that refers to the interaction between the way morphemes (units of meaning) and phonemes (units of sound) interact in language based on context (Moats, 2003).
14. *Orthographic mapping* – The process by which proficient readers store written words for automatic recognition (Spear-Swerling, 2018).
15. *Phonemic awareness* – Understanding of the individual sounds that make up words and the ability to manipulate sounds in words (Hougen & Smartt, 2012).
16. *Pseudo-word reading* – Assesses a reader's ability to apply standard phonetic decoding to non-words, such as "lim," "tup," or "pof" (Kilpatrick, 2015).
17. *Rapid automatized naming* – A test that assesses a reader's ability to rapidly name items, typically letters or letter sounds; however, it may include picture naming on some assessments (Kilpatrick, 2015).
18. *Receptive vocabulary* – The language heard and understood by the individual (Dunn, 2019)
19. *Schema* – A mental model or framework held by an individual (Glossary of Educational Reform, 2023).
20. *Scaffolding* - Support or instructional techniques to move students toward better and more advanced understanding and resulting in more independence in learning (Glossary of Educational Reform, 2023).
21. *Simple view of reading* – A theory that states word recognition times language or linguistic comprehension equals skilled, proficient reading (Spear-Swerling, 2018).

22. *Standard deviation* – A statistic used to show how spread-out data is around the mean (Gall et al., 2007).
23. *STEM vocabulary* – Specific words that relate to the processes of science, technology, engineering, and math. (Resources for Early Learning, 2023).
24. *Story Champs* – A targeted language intervention program that may be used in small groups, whole groups, or virtual/tele programs to provide systematic instruction in story structure, informational text structure, language complexity including grammar, syntax, and parts of speech, vocabulary development, and writing to students in pre-kindergarten through third-grade (Language Dynamics Group, 2019; Spencer & Peterson, 2018).
25. *Structured literacy* – An approach that emphasizes explicit and systematic teaching of all the components of language, in this case, English (Spear-Swerling, 2018).
26. *Tier 1 vocabulary* – Vocabulary words considered common, everyday vocabulary words; the most basic words in English which typically have only one meaning (Kirtland School District, 2023).
27. *Tier 2 vocabulary* – Vocabulary including high-frequency words that occur across domains and often have multiple meanings and are particularly important for academic success (Kirtland School District, 2023).
28. *Tier 3 vocabulary* – Low-frequency vocabulary words that are typically subject or domain-specific, i.e., osmosis, algorithm (Kirtland School District, 2023).
29. *Title I school* – A school where at least 40% of students live in poverty (United States Department of Education, 2018)
30. *Universal screening* – The process of assessing all students' multiple times per year to collect data and identify those needing more intensive instruction (Webster, 2021).

31. *Whole language* - A method of reading instruction in which reading, listening, speaking, and writing is combined and decoding or reading words is imbedded in context (Goodman, 1996).
32. *Zone of Proximal Development* – The difference between what a student or any learner can do independently and what the student can do with guidance from a more advanced partner or teacher (Vygotsky, 1930-1934/1978).

CHAPTER TWO: LITERATURE REVIEW

Overview

A systematic review of the literature was conducted to explore the role of language comprehension and vocabulary knowledge in early childhood as it relates to overall literacy development. Chapter two reviews the research on this topic and will be framed by the sociocultural theory of cognitive development postulated by Vygotsky (1930-1934/1978). The theoretical framework is followed by a review of recent literature on the differences between students from varying socioeconomic backgrounds (Kelley et al., 2020). The literature surrounding the impact of language differences on kindergarten and first-grade students' vocabulary knowledge will be discussed, along with studies on language intervention that appear in the literature (Justice et al., 2019; Levine et al., 2020). Finally, a gap in the literature will be identified that indicates the need for research on the role of vocabulary intervention in early childhood education for students who enter kindergarten and first grade with low levels of English vocabulary proficiency (Dolean et al., 2019; Jones et al., 2019; Kelley et al., 2020).

Theoretical Framework

Vygotsky's (1930-1934/2012) sociocultural theory, later expanded upon by Bandura (1977) and Hill (2019), framed this study. The sociocultural learning theory is valuable to teachers because of the emphasis on language, social interaction, scaffolding instruction, and the zone of proximal development. Sociocultural theory aids educators in understanding the importance of language and how social interaction between students, teachers, and others moves students along the continuum of learning. Of critical importance to this theory is language, as an individual's language development signals an advance in cognitive growth and provides a way

for teachers to gauge progress and the student's understanding of the material being taught (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012).

The sociocultural theory states that learning occurs through social interactions. Theorists concluded that because learning is based on social interactions, teachers have significant control over students' learning within the classroom. The theory postulates that language is the foundation of all learning, including reading and writing. In addition, reflective thinking, reasoning, and logic are the products of an individual's language (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978).

According to sociocultural theory, oral language plays a vital role in cognitive development (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978). The student's learning is predicated upon the teacher's ability to break learning down into small increments and provide immediate feedback to minimize misconceptions, thus reducing the cognitive load and improving the odds that learning will be moved from short-term working memory into long-term storage (Archer & Hughes, 2011; Miller, 1956). However, students advance differently based on where they are in terms of development and the ability of the teacher to scaffold instruction to make the task easier. According to Vygotsky's (1930-1934/2012) theory, the zone of proximal development is where learning is advanced as it represents the area where a learner can complete a task with assistance that he or she would not be able to complete independently. As the teacher or more able others assist the child by scaffolding the task, the child is being guided through the process and will eventually develop the ability to complete the task alone (Bandura, 1977; Vygotsky, 1930-1934/2012).

Vygotsky, who died in 1934 and had most of his works published posthumously, proposed the sociocultural learning theory (1930-1934/1978). Vygotsky's theory was further

expanded upon by Bandura (1977), who added the term scaffolding, and Hill (2019), who examined the link between motivation and cognitive language and the integration of language learning and content development. The sociocultural theory of cognitive development explains that in the classroom setting, learning develops from the top down, with teachers guiding students to higher academic language and learning levels (Hill, 2019). All three theorists supported the idea of small group instruction within the classroom to target learning for students and accelerate growth (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012). The basis for learning is speech, and the theory contends that speech develops in three distinct phases: external, egocentric, and inner speech. Since each stage represents an advance in cognitive development, it is essential to understand the characteristics and importance of each phase (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978).

The first phase is external speech (Vygotsky, 1930-1934/2012). In this phase, children learn to use language to express themselves. According to Vygotsky's (1930-1934/2012) theory, external speech is also the most prevalent precursor to the other phases of speech (Jones, 2008). External speech is also the easiest to assess and gauge as this type of speech is expressive and vocalized to others (Vygotsky, 1930-1934/1978). As children begin to speak, the parent, teacher, or more able others provide feedback and correct speech errors. This feedback allows the child to develop more standard speech patterns, including verb tense and speaking in complete sentences (Vygotsky, 1930-1934/1978).

The next phase is egocentric speech (Vygotsky, 1930-1934/2012). Once external speech begins to develop, the child begins egocentric speech. In this phase, children view the world through their lens and do not consider the views of others. Speech in this stage is based on what

the child wants and needs without concern for others (Vygotsky, 1930-1934/1978). This stage may include a description of what the child is doing, but it is only from the child's perspective.

The final phase is inner speech (Vygotsky, 1930-1934/1978). Inner speech occurs when an individual thinks through things or converses in his or her head. In Vygotsky's (1930-1934/1978) theory, inner speech is where verbal reasoning occurs and denotes an advancement in cognitive development and thinking (Jones, 2008). This advancement is where the individual develops the ability to plan, interpret, and problem-solve internally (Vygotsky, 1930-1934/1978). In this stage, thinking and reasoning become more abstract, and higher-level thinking and functioning occur as an individual can plan and think through various processes, including consequences for one's actions, and even develop self-regulation techniques (Jones, 2008; Vygotsky, 1930-1934/1978).

As students progress through the three stages of speech, cognitive growth is facilitated and encouraged when students learn academic vocabulary. This process can be accelerated when teachers directly teach academic vocabulary within the classroom setting (Hill, 2019) and by scaffolding (Bandura, 1977). In other words, by understanding where the student is developmentally, the teacher can scaffold instruction to move the child through various stages to facilitate development and increase cognitive growth through social interaction ((Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012).

The theory of sociocultural development altered the view of teaching and education by helping practitioners develop a sense of how learning is transmitted socially through interaction with more able models (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012). A significant contribution is the concept of the zone of proximal development and the need for scaffolding, a term coined by Bandura (1977). The proximal development zone represents a place where

students can complete more advanced tasks with help or scaffolding from a more proficient other. The other may be a teacher or a more able peer who guides the student to higher levels. As students' complete tasks with the assistance of others, they move toward independence or proficiency in the task. In this model, small group instruction based on student needs becomes paramount as teachers seek to move students along the continuum of learning to advancing levels. Language and vocabulary knowledge is paramount to advancement through the learning continuum (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978).

Language plays a significant role in explaining the task and talking through activities to aid the student in understanding and clarifying misconceptions with feedback (Vygotsky, 1930-1934/2012). The implication of this theory is that students need a model to learn and grow and that providing them with this model means they will be more likely to master the material or skill being taught (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012). When students lack the vocabulary skills to understand what is being taught, they are disadvantaged in every aspect of their academic endeavors. The theory of sociocultural development indicates that for students to advance skills in any area, direct instruction with feedback from the teacher or a more able peer is of critical importance (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978). This is true of all learning, but considering the crucial role vocabulary knowledge plays in comprehension and cognitive growth, establishing a baseline of receptive and expressive vocabulary and intervention to facilitate that growth early in a child's school career is needed to ensure that the gap between students exhibiting vocabulary delays and their more advanced peers does not continue to widen (Snowling & Hulme, 2021).

The implication of sociocultural theory is that learning occurs through interaction with others (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978). While the theory does not

discuss direct instruction, the theory does emphasize the importance of teaching students what they need to know based on their developmental level. The theory also supports the idea that teachers need to understand the child's current developmental level, and where the child needs to be to meet expectations at various ages and grade levels to plan activities appropriately. The sociocultural theory supports the idea of instruction in vocabulary and language development as this area is critical to the student's success, and according to the theory, advances in language development represent advances in cognition. Therefore, students who lack the vocabulary skills to understand words heard and read or even to ask or answer questions are at a distinct disadvantage across all academic areas, and teachers need a way to identify and scaffold language learning to ensure student success (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/2012).

The sociocultural theory of cognitive development provides a rationale for assessing and intervening with students as early as possible (Bandura, 1977; Hill, 2019). Students who enter school with limited vocabulary or background knowledge are at a disadvantage when compared to students with more typical vocabulary development, and simply hoping that the student will pick up what he or she needs to know to be successful is not likely without instruction aimed at ensuring that the student is successful (Bouchrika, 2021). Since language is the basis for learning, and sociocultural theory indicates that finding a child's developmental level and scaffolding instruction to move students towards independence on a task is critical to learning, including protocols for early intervention in language and vocabulary development seems prudent (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978). Teachers are increasing the odds of academic success by identifying the student's vocabulary and concept knowledge early

and providing scaffolded instruction to ensure that the student can understand what is heard and read.

The sociocultural theory of cognitive development fits this study on language proficiency and vocabulary development in early childhood as this theory examines how human beings learn and develop and the importance of language in cognitive growth and development (Bandura, 1977; Hill, 2019; Vygotsky, 1930-1934/1978). Further, understanding the need to model and scaffold instruction can assist teachers in planning and implementing lessons designed to move students to higher levels of functioning (Bouchrika, 2021). In addition, the sociocultural theory of cognitive development seeks to explain how students learn from others and indicates that language is critical to learning and cognitive development (Dolean et al., 2019; Jones et al., 2019; Justice et al., 2019; Miller, 1956; Vygotsky, 1930-1934/1978). Currently, there is a pervasive lack of focus on vocabulary development in kindergarten and first grade classrooms, which often widens over time and negatively impacts the student's ability to understand what is heard and read or to integrate new learning into preexisting knowledge (Bouchrika, 2021; Snowling & Hulme, 2021). This research study could aid practitioners in developing protocols that address all areas of learning acquisition, including vocabulary and language, and close the academic gaps between subgroups of students. By understanding the importance of vocabulary instruction as a means of making sense of new learning and the focus on teacher-led, small-group, direct instruction in language development at the Tier 1 and Tier 2 vocabulary level, teachers may be better equipped to understand, identify, and intervene to ensure that students have the language proficiency necessary to integrate new information into long term storage.

Related Literature

Extensive research has been done into reading acquisition in young children (Goldberg & Goldenberg, 2022). While many of these studies focus on the difficulty in learning to read or reading disabilities, many findings are still applicable in examining intervention for students not identified as having a reading or language disability (Spear-Swerling, 2018; Webster, 2021). In recent years, stakeholders have begun demanding that reading instruction in the primary grades be based on scientific reading instruction and not balanced literacy or whole language practices, as reading instruction based on cognitive and neuroscience benefits all students, harms none, and is essential for 15% to 20% of students to learn to read proficiently (Castles et al., 2018; Lorimor-Easley & Reed, 2019; Spear-Swerling, 2018). The related literature section discusses the controversy surrounding how reading should be taught and the most common methods for teaching reading over the past 60 years. In addition, a discussion about current movements in teaching reading, the link between vocabulary and socioeconomic status, early intervention in reading, the impact of overall language and vocabulary on learning, and the implication of direct instruction in teaching are discussed. The related literature section closes with a discussion of oral language and studies related to language intervention.

The Reading Wars

From the 1960s to the present, diverse theorists have proposed various methodological approaches to teaching reading (Castles et al., 2018; Goldberg & Goldenberg, 2022; Petscher et al., 2020). Meanwhile, the statistics on fourth grade reading proficiency have remained between 34% and 36% over the past 40 years (NAEP, 2022). New cognitive science and neuroscience evidence may provide insights into this issue (Petscher et al., 2020). Functional magnetic resonance imaging (fMRI) allows scientists to see what happens in the brain when children and adults read (University of California San Diego Center for Functional Magnetic Resonance

Imaging, 2023). This has led to the discovery of significant differences in brain activation between proficient and struggling readers (Shaywitz & Shaywitz, 2020; University of California San Diego Center for Functional Magnetic Resonance Imaging, 2023). Scientists can now detect these patterns in children's brains before they begin to read (Shaywitz & Shaywitz, 2020; Spear-Swerling, 2018; Webster, 2021). Functional MRI also shows that if identified early and provided with appropriate phonemic awareness and rapid naming interventions, children with patterns associated with impaired readers can rewire their brains so that the patterns are more like proficient readers' in all but the most extreme cases (Shaywitz & Shaywitz, 2020).

All this information has led parents, teachers, and civil rights groups to file lawsuits and push legislation requiring schools to move away from whole language or balanced literacy to scientifically based reading instruction (Castles et al., 2018). This scientifically based reading instruction, also known as the science of reading, focuses on developing decoding and language comprehension without assuming students have either skill upon school entry (Castles et al., 2018; Goldberg & Goldenberg, 2022). To understand the current movement to change reading instruction, an understanding of whole language and balanced literacy must develop, as these methods have been, and in many places, still are, the predominate method of reading instruction in elementary schools (Lorimor-Easley & Reed, 2019; Spear-Swerling, 2018).

Whole Language

Whole language grew out of movements in the 1960’s and 1970’s to change the way reading was taught to a more holistic approach (Goodman, 1996). Whole language is based on the concept that reading is as natural as speaking (Clay, 2016; Goodman, 1996). Ken Goodman (1996), the father of whole language, first postulated the theory in the 1960s and called for phonics and other systematic and explicit instructional practices to be abandoned and replaced

with immersion in high-quality children's literature. According to Goodman's theory, by simply exposing students to reading and writing, they would learn to read and write. Goodman (1996) further contended that reading for meaning is all that mattered; therefore, any errors that did not alter meaning were not an issue. His most famous example is that if a child reads the word pony for horse, it does not matter because meaning is not interrupted.

Goodman's (1996) theory aligned closely with Clay's (2016) theory and led to the development of many of the most popular reading curriculums in the United States and other English-speaking countries. These programs include Reading Recovery by Marie Clay (2016), which was first published in the 1970s, Units of Study by Lucy Calkins (2015), and Fountas and Pinnell's (2017) multiple products for core classroom instruction and intervention (Petrilli, 2020). However, research conducted by the National Reading Panel (2000) found that classrooms where students were explicitly taught phonemic awareness, phonics, fluency, vocabulary, and comprehension, showed the best results for student learning. This led educators to adopt balanced literacy, which was believed to combine the tenets of Goodman's (1996) theory with instruction in the five areas identified by the National Reading Panel (2000).

Balanced Literacy

Balanced literacy proponents believed that by combining the best of both instructional theories, teachers would instruct students based on student needs through differentiation (Tompkins, 2018). The whole language theory, however, is based on a faulty premise (Shaywitz & Shaywitz, 2020; Snow, 2020; Spear-Swerling, 2018). Learning to read is not a natural process like learning to speak, and without explicit, systematic instruction in the code that is the English language, many children will never learn to read proficiently (Dewitz & Graves, 2021; Goldberg & Goldenberg, 2022; Lorimor-Easley & Reed, 2019; Snow, 2020). Balanced literacy was

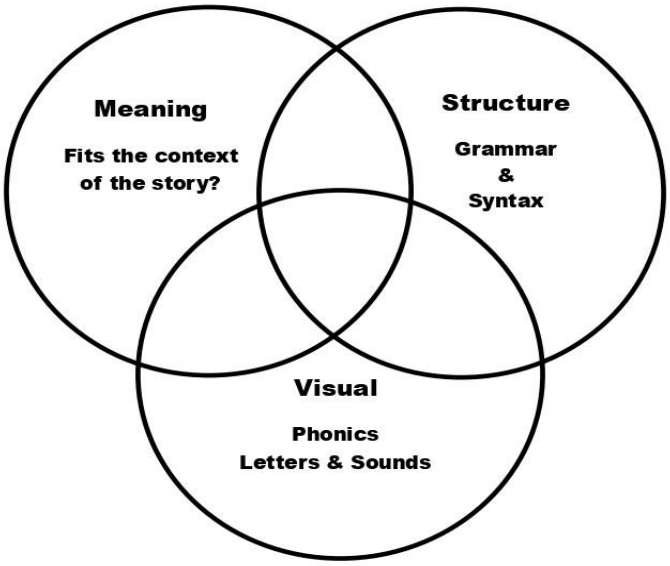
believed to be the answer, and universities and school districts have promoted using balanced literacy for decades (Goldberg & Goldenberg, 2022; Snow, 2020; Tompkins, 2018). While balanced literacy is often equated with a balance of activities and instructional methods, no one definition exists to define precisely what balanced literacy teaches (Snow, 2020). According to Snow (2020), whole language and later the balanced literacy approach to reading viewed this method as a whole-to-part analysis where phonics is taught through analogy, such as word families, and not through synthetic phonics, which systematically and explicitly teaches letter sounds (Tompkins, 2018). Much of the instruction in balanced literacy classrooms focuses on whole-word memorization and the use of the three-cueing system, which has been called into question by researchers and cognitive scientists (Lorimor-Easley & Reed, 2019; Spear-Swerling, 2022).

The three cueing system is used in most balanced literacy curriculums and states that readers use three sources of information when reading, as shown in Figure 1 (Lorimor-Easley & Reed, 2019). These three systems are meaning structure, and visual information. In this view, meaning and structure develop first as a child is spoken and read to at home and begins to develop a sense of story and an understanding of English syntax or grammatical structures (Clay, 2016; Fountas & Pinnell, 2017). The pictures hold meaning and can be used to teach or compensate for decoding. Students are prompted to look at the picture, think about the story, think about what would make sense, and then see if that word sounds right in the sentence, not to look at the letters and try to sound out the word (Clay, 2016; Fountas & Pinnell, 2017; Lorimor-Easley & Reed, 2019; Snow, 2020; Tompkins, 2018). This method has come under scrutiny in recent years as brain imaging indicates this method activates areas of the brain associated with disabled readers, not proficient, skilled readers (Shaywitz & Shaywitz, 2020; Snow, 2020).

While controversy regarding balanced literacy and its predecessor, whole language, continues, the fact remains that literacy scores for United States fourth-grade students have stagnated since the 1990s, with just 34% to 36% of students reading proficiently (NAEP, 2022). These statistics have triggered many researchers and advocates to call for scientifically based reading instruction, typically referred to as the science of reading (Dehaene, 2009; Fisher et al., 2016; Goldberg & Goldenberg, 2022; Kilpatrick, 2015; Lorimor-Easley & Reed, 2019; Shaywitz & Shaywitz, 2020; Snow, 2020; Spear-Swerling, 2022).

Figure 1

The Three Cueing Model



The Three Cueing System adapted from Clay, 2016

Science of Reading

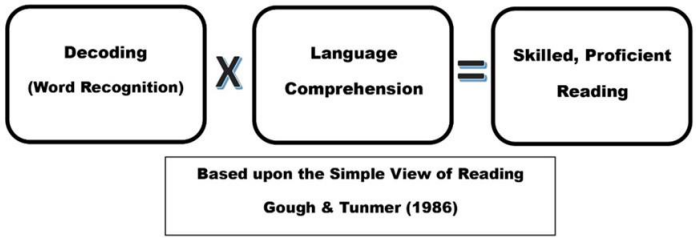
Simply put, the science of reading is the body of knowledge from multiple disciplines that provides insight into how human beings acquire the ability to read (Moats, 2003). Educational researchers, cognitive scientists, neuropsychologists, and university researchers have

all contributed to this body of knowledge (Dehaene, 2009; Kilpatrick, 2015; Seidenberg, 2017; Shaywitz & Shaywitz, 2020; Spear-Swerling, 2018). It is now clear that human beings were never hard-wired to learn to read and that to do so, systems in the brain must be wired together in ways that nature never intended (Kilpatrick, 2015; Shaywitz & Shaywitz, 2020). These systems include the parts of the brain used for visual recognition, sound processing, meaning or comprehension of spoken language, and something that Dehaene (2009) calls the letterbox, where letters are linked to speech sounds. For this system to wire together efficiently, orthographic mapping of words must occur, and this only happens through direct exposure and repetition to the letters that represent speech sounds (Moats, 2003; Spear-Swerling, 2022).

Orthographic mapping is a cognitive process that allows for the exact storage and retrieval of words in the brain (Hougen & Smartt, 2012; Kilpatrick, 2015; Moats, 2003; Spear-Swerling, 2018). In order to efficiently store the word, the individual must know the letter symbols that represent the sounds in the word as well as what the word means, as storage is linked to the part of the brain that holds meaning and images, or what Piaget (1951) referred to as schema (Dehaene, 2009; Hougen & Smartt, 2012; Kilpatrick, 2015; Spear-Swerling, 2018). The simple view of reading, first created by Gough and Tunmer (1986), takes the concepts from the science of reading and combines them into a formula where word recognition or decoding, multiplied by linguistic or language comprehension, equals skilled, proficient reading as shown in Figure 2 (Gough & Tunmer, 1986).

Figure 2

The Simple View of Reading



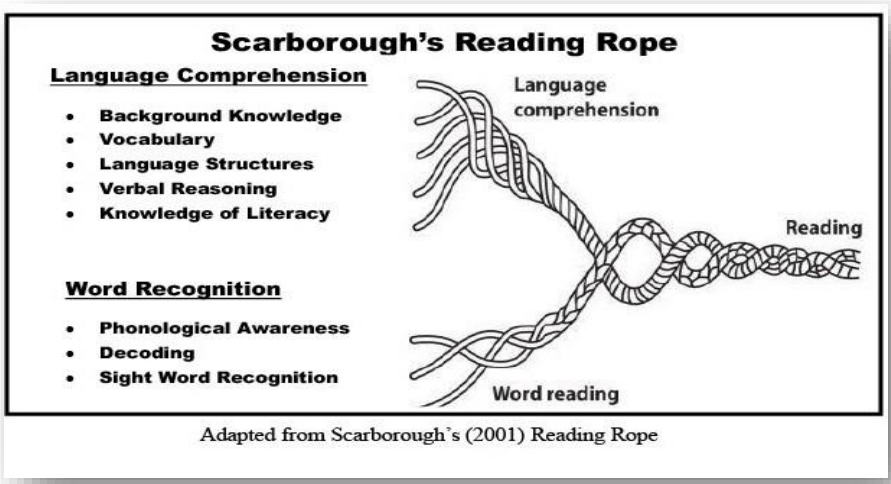
The Simple View of Reading

The simple view of reading (see Figure 2) states that word recognition times language (linguistic) comprehension equals skilled, proficient reading (Gough & Tunmer, 1986; Spear-Swerling, 2022). The formula has been further expanded into Scarborough's (2001) rope, as shown in Figure 3, which breaks each section into sub-skills (Francis et al., 2018; Spear-Swerling, 2018). Many schools are moving toward structured literacy and other systematic programs based on this view of reading (Webster, 2021). Mississippi, typically one of the most underachieving states, the only state that has made gains according to NAEP (2022), did so by training all elementary teachers in the science of reading and adopting materials and standards based on structured literacy (Mississippi Department of Education, 2023). Most teachers, however, did not learn this method in college, as balanced literacy has framed instructional practices for more than three decades, and its tenets directly contradict the simple view of reading. Since the simple view of reading is an equation, both areas, word recognition and language comprehension, are of equal importance. This differs from balanced literacy and whole language, in which meaning, and language structures develop before students learn letters and

sounds. This belief that language is already established when a child begins to read may explain why there is little emphasis on the language comprehension part of the equation, which includes vocabulary until second grade or later (Lorimor-Easley & Reed, 2019; Spear-Swerling, 2018).

Figure 3

Scarborough's Reading Rope



Current programs in early childhood reading instruction initiatives focus on the first part of the equation: word recognition (Apel, 2021). However, many children, particularly those from low socioeconomic backgrounds and those who speak another language at home, are at a distinct disadvantage regarding language comprehension in general, and English vocabulary specifically (Dewitz & Graves, 2021; Jones et al., 2019; Levine et al., 2020; Pinto et al., 2016; Spear-Swerling, 2022). However, according to the simple view of reading theory, a person's reading comprehension should be equivalent to his or her language comprehension. By not addressing language early, students may never become skilled, proficient readers (Francis et al., 2018). If a child has strong vocabulary knowledge, learning content words and concepts at higher levels will be easier as they have categories into which they can integrate new vocabulary with words

already in their receptive vocabularies (Dolean et al., 2019; Jones et al., 2019; Levine et al., 2020). Research has shown that the breadth of language and vocabulary knowledge in early childhood are strong predictors of reading comprehension and overall reading achievement after third grade (Spear-Swerling, 2018). Once a child becomes a proficient decoder, vocabulary and language comprehension are the best predictors of continued reading achievement (Moats, 2003; Snowling & Hulme, 2021). Despite this little has been written about the importance of language comprehension and vocabulary development as it relates to reading acquisition for kindergarten and first-grade students (Dewitz & Graves, 2021).

An examination of Scarborough's rope (2001) theory shown in Figure 3, defines word recognition as reading the word or words (Apel, 2021). That may include sounding out the word or reading a word known automatically or by sight (Apel, 2021; Dewitz & Graves, 2021). Language comprehension, on the other hand, is more complex (Dewitz & Graves, 2021; Scarborough, 2001). Simply speaking or reading a word does not fully explain language comprehension (Dolean et al., 2019). According to Apel (2021), language comprehension involves five key areas. These areas are phonology, syntax, morphology, semantics, and pragmatics, also the five critical aspects of oral language (Apel, 2021; Hougen & Smartt, 2012).

Nation (2019) concurs, stating that if a person learned to decode a foreign language but did not know what the words meant, then the person would not be able to make sense of what was read. In this formula, if a child can read the word but needs help understanding it, the child is not a proficient reader (Spear-Swerling, 2018). Since reading is the attempt to understand the message written, language comprehension is paramount in reading acquisition (Nation, 2019). Snowling and Hulme (2021) also concur, citing evidence that suggests orthographic mapping, or the ability to store and retrieve words automatically from memory accurately, is improved when

vocabulary and language comprehension improve, indicating that decoding and understanding language are reciprocal processes.

In a distinct shift from identifying a student's use of meaning, structure, and visual information, Nation (2019), uses the simple view of reading formula to create profiles of readers. Students are mapped into a circle within four distinct quadrants: good comprehension, good decoding, poor comprehension, and poor decoding. Poor decoding can undoubtedly be linked to comprehension issues as massive amounts of cognitive energy must be used to attempt to read the words, leaving little energy for making meaning from the text (Apel, 2021; Nation, 2019; Paas & Merrienboer, 2020). In these cases, comprehension often improves if decoding improves (Apel, 2021; Paas & Merrienboer, 2020). However, Snowling and Hulme (2021) point out that while many studies indicate that vocabulary knowledge as early as preschool can predict differences in comprehension later in the child's academic career, other studies suggest morphological knowledge early on improves decoding skills. While the two are linked, it is still being determined if one precedes the others or if decoding and language comprehension develop simultaneously. Since reading relies on a vast array of cognitive skills, it may be impossible to fully isolate any one process from the whole. For this reason, Snowling and Hulme (2021) point out that it is essential to identify the areas where the child is experiencing difficulties to correctly address the issue and create the best opportunity for the child to be successful.

One way to assess variations in reading comprehension versus listening comprehension is to read something to the child to see if there is a difference between listening comprehension and reading comprehension (Pinto et al., 2016). If listening comprehension is not an issue, then correcting the decoding may be all that is needed (Nation, 2019). However, some children decode well, read fluently, and still struggle with comprehension. These students often struggle

to answer questions about a passage read to them, and scores of listening comprehension and reading comprehension are typically similar (Nation, 2019; Spear-Swerling, 2022). Other research suggests that a lack of exposure to language and vocabulary contributes to the gaps often seen between students of poverty and their more affluent peers (Dolean et al., 2019; Justice et al., 2019).

Language and Socioeconomic Status

Studies have shown that students enter kindergarten with vastly diverse vocabulary proficiency levels, and these differences are strong predictors of later academic performance (Dolean et al., 2019; Levine et al., 2020; Pinto et al., 2016). Students from poverty enter preschool at least one standard deviation below their more affluent peers, and this is a primary contributor to the persistent achievement gap that tends to widen as students' progress through elementary school and beyond (Wasik & Hindman, 2020). By the time a child is two years old, most have developed a 200-to-300-word vocabulary (Vatalaro et al., 2018; Wasik & Hindman, 2020). Merz et al. (2020) found that socioeconomic differences in students' language, vocabulary, and literacy skills are not only well-documented but emerge early, widen over time, and are persistent, indicating that current modes of instruction are not adequately addressing the area of language.

There are also significant differences between the number and types of words children from various backgrounds are exposed to prior to school entry (Vatalaro et al., 2018). Research has found that children from high-poverty backgrounds are exposed to an estimated 616 words per waking hour, compared to 1251 words per waking hour for working-class families and 2153 words per waking hour for children from middle and upper-middle-class homes (Vatalaro et al., 2018). In addition, the type of words heard also varied significantly, with children in poverty

hearing more directive speech, such as "sit down" and "eat your food," while children in middle and upper-middle-class homes heard and engaged in more conversational speech (Vatalaro et al., 2018; Wasik & Hindman, 2020). This difference in the number and variety of words creates a vast difference in vocabulary understanding and language comprehension for young children entering formal school settings (Kelley et al., 2020; Vatalaro et al., 2018). In addition, convincing evidence supports a link between language experiences and reading achievement.

Current research has found that these differences go beyond surface-level knowledge and impact the structure and function of the regions of the brain that support language development, and there are clear differences between children of poverty and their more affluent peers (Kelley et al., 2020). Therefore, the amount and type of language used in the home impacts the development of language centers in a child's brain, which are evident early in a child's life (Kelley et al., 2020; Marino & Gervain, 2019; Merz et al., 2020). According to Spear-Swerling (2022), a large body of research indicates that reading comprehension is linked to a child's vocabulary. Researchers have also found that by age three, there can be as much as a 30-million-word gap between children from low socioeconomic backgrounds and those from higher socioeconomic backgrounds (Levine et al., 2020). Snowling and Hulme (2021) point to longitudinal studies with compelling evidence that students with oral language weaknesses are at elevated risk for reading disorders. Statistics indicate that 7% of school-age children meet the criteria as having a specific language impairment, sometimes referred to as developmental language disorder, with no known cause (Gallagher et al., 2019). Tracking these children as they move through elementary school found that students with specific language impairments often struggle to learn to read and fall behind their peers, and there is a question about whether these

children have an actual disability or if they have unidentified language deficits that were not addressed until later in their academic careers (Gallagher et al., 2019).

As stated earlier, language studies indicate that students from lower socioeconomic backgrounds typically have lower levels of expressive and receptive vocabulary than their more affluent peers, and this directly correlates to continued academic difficulties in reading acquisition and reading comprehension (Wasik & Hindman, 2020). However, this gap only partially explains the differences in comprehension often seen in children (Levine et al., 2020). Therefore, programs aimed at improving vocabulary without regard for syntax, pragmatics, or background knowledge are typically unsuccessful at closing the gap (Levine et al., 2020). Research has identified four distinct conditions that contribute to the development of strong vocabulary skills (Wasik & Hindman, 2020). These four areas include repeated exposure to unfamiliar words, explicitly defining unfamiliar words, presenting unfamiliar words in meaningful contexts, and conversing with more skilled peers or adults who scaffold learning through feedback (Wasik & Hindman, 2020). Ensuring teachers can deliver this type of feedback indicates the need for training or professional development as necessary features of any initiative designed to improve language or vocabulary proficiency in children (Snowling & Hulme, 2021; Wasik & Hindman, 2020).

According to Dolean et al. (2019), other factors, including maternal education level, family income, bilingual versus monolingual households, and achievement ability or intelligence quotients, all play a role in a child's language development and reading comprehension and must be considered when examining how to ensure student success. These other factors are sometimes called pathways of influence and form a reciprocal loop from an academic setting to home life (Gallagher et al., 2019; Marino & Gervain, 2019). Kargin et al. (2022) examined the vocabulary

knowledge of students with poor comprehension skills in Turkish, a highly agglutinative language. This research found that poor reading comprehension and lack of morphological knowledge were highly correlated (Kargin et al., 2022).

The Impact of Language Proficiency

Students who enter kindergarten and first grade with low vocabulary knowledge are disadvantaged in comprehending more advanced academic language (Dolean et al., 2019). This lack of vocabulary can lead to difficulty learning new information (Dolean et al., 2019). Since new learning requires attention in working memory, and background knowledge makes it easier to transfer new learning into long-term storage, understanding what a child knows and how new learning is processed is critical (Francis et al., 2018; Hill, 2019). In this respect, many children from low socioeconomic backgrounds are disadvantaged in learning due to lower background information and vocabulary (Dolean et al., 2019; Justice et al., 2019). Hill (2019) proposes that while everyday language develops through a bottom-up process, in which students develop categories of knowledge through daily interaction, academic vocabulary must be taught from the top down. However, for many students in poverty, this does not occur unless the student has an identified language disability or speaks a language other than English as the primary language (Dolean et al., 2019).

If a student is from a home where English is not the first language, that child may receive interventions to develop language proficiency (Dolean et al., 2019). However, students with low English proficiency levels who do not speak a foreign language at home receive no additional assistance under most current guidelines (Walker et al., 2020). Since Vygotsky's (1930-1934/1978) sociocultural theory directly supports the idea that cognitive growth is based on language development, this theory aligns with the idea that providing interventions for these

students, regardless of the language spoken at home, could have a positive impact on the development of English proficiency and overall academic achievement (Levine et al., 2020; Pinto et al., 2016).

When considering that vocabulary development is cumulative, meaning that the more words a person is exposed to, the more words he or she will understand and the faster the individual will assimilate novel words into the receptive and expressive vocabulary, providing intervention for students as soon as differences are noted is essential. According to Janssen et al. (2019), vocabulary differences often remain stagnant or widen over time, indicating that current practices must address the gaps in children from varying backgrounds. Other theories of reading development, such as whole language and balanced literacy, propose that simply by reading to children, they will develop rich vocabularies in early childhood, and when a child begins to read on his or her own, the child will pick up more vocabulary words in context (Fountas & Pinnell, 2017).

However, according to Schmitt et al. (2017), even proficient adult readers need to know and understand between 95% and 98% of words read in text to comprehend the meaning. In addition, examining text used in basal readers and books for early readers found that simply relying on context clues to understand unfamiliar words was problematic, as only 36% of words encountered had sufficient context to support understanding (Schmitt et al., 2017; Spear-Swerling, 2022). A study by Janssen et al. (2019) found that vocabulary achievement in kindergarten was highly correlated with third grade reading comprehension. In addition, there is a reciprocal process between decoding and vocabulary recognition, with studies indicating that decoding and storing a word in memory occurs faster when the word is part of the individual's receptive and expressive vocabulary (Duff, 2019; Janssen et al., 2019; Schmitt et al., 2017;

Spear-Swerling, 2022). However, most early reading intervention programs and initiatives focus on decoding skills rather than vocabulary development (Janssen et al., 2019).

Early Intervention in Reading

While phonemic awareness and phonics-based interventions are part of most early childhood intervention programs, language and vocabulary interventions are not, and morphology is often not addressed until second grade or later (Dolean et al., 2019; Francis et al., 2018; Jones et al., 2019; Justice et al., 2019; Lundberg, 2009). Gallagher et al. (2019) found that most classroom teachers need more understanding of language development. While the speech pathologist examines interventions from the language development lens, classroom teachers typically need more understanding of what students need to improve language proficiency, particularly regarding vocabulary development (Gallagher et al., 2019). If a child speaks a language other than English at home, the child may receive intervention services with an English as a second language teacher. If the child qualifies for an individualized education plan to address a specific speech or language disability, the child will receive supplemental services from a speech pathologist and accommodations to help the child access the general curriculum (Dewitz & Graves, 2021). However, language interventions for children who do not speak a language other than English or qualify as speech and language impaired are challenging to find and implement and are not currently part of the standard operating procedures to identify and assist students who are at risk for reading difficulties upon school entry (Dewitz & Graves, 2021). In addition, training is needed for teachers to assess, understand, and assist students with language or vocabulary delays.

According to Walker et al. (2020), literature surveys related to language interventions in early childhood settings found that when childcare workers were trained to implement

interventions in classrooms with three to five-year-old students, the students gained language use and understanding. However, the group sizes were small, and much of the data did not include the target population (Walker et al., 2020). The review of these studies indicates that advancements in language acquisition can be aided with appropriate interventions, but how much of a difference this can make for children in kindergarten and first grade and how this type of instruction impacts responses to intervention models is still being determined (Walker et al., 2020).

Response to Intervention: RTI

The typical response to intervention (RTI) model, often depicted as a pyramid, calls for three tiers of students based on need (Brown-Chidsey & Steege, 2010; Siegel, 2020; Bufman et al., 2011). Tier 1 is called core instruction and typically includes students meeting or exceeding grade-level standards or expectations. Tier 2 consists of students slightly below grade level, often defined as six months or less behind grade level expectations. Tier 3 students are most at-risk, often falling nine months to over a year below grade level and requiring the most intensive interventions. Tier 2 students may receive intervention in small groups with no more than a 1:6 teacher-to-student ratio in or outside the classroom. Tier 3 students also receive small group or individualized instruction with group sizes ranging from 1:1 to 1:3 teacher-student ratio. Students with individual education plans (IEPs) who receive special education services may be Tier 3 or, in some states, Tier 4 (Brown-Chidsey & Steege, 2010; Buffum et al., 2010; & Buffman et al., 2011).

The goal of response to intervention is to determine if students can catch up with more advantaged or typically developing peers or if there is evidence to suggest the child needs long-term, specialized instruction and accommodations through special education services (Buffum et

al., 2010; Siegel, 2020; Spear-Swerling, 2018; Buffman et al., 2011). According to Arias-Gurdin and Llamazares (2021), students with reading disabilities account for the largest percentage of students with average to above-average intelligence quotient (IQ) scores who receive special education services for reading. Traditionally, for a student to meet the criteria as a child with a learning disability, a discrepancy between the child's IQ score and performance had to be identified (Arias-Gurdin & Llamazares, 2021). This often led to students being identified in second grade or later, meaning they were not receiving services to address their learning needs early (Arias-Gurdin & Llamazares, 2021; Kilpatrick, 2015; Buffman et al., 2011). Many states, including South Carolina, have recently enacted changes in student identification (Arias-Gurdin & Llamazares, 2021). Now, schools must show that they have followed appropriate response to intervention models for students to qualify for special education services (Arias-Gurdin & Llamazares, 2021; Brown-Chidsey & Steege, 2010).

This change means that schools must use universal screening data for all students and provide high-quality core instruction and evidence-based interventions as soon as possible (Arias-Gurdin & Llamazares, 2021; Buffman et al., 2011). These interventions must address student needs and monitor progress to ensure they are responding to the intervention. If the child fails to progress, the intervention must be more intensive and targeted (Arias-Gurdin & Llamazares, 2021). The greater the deficit, the more intensive the intervention, the smaller the group size, and the more often progress monitoring must occur (Arias-Gurdin & Llamazares, 2021; Spear-Swerling, 2022). The goal is to prevent students from lagging behind their peers or waiting until the child is older to intervene.

Response to intervention can be a powerful tool in helping students catch up and meet grade level expectations without the need for special education services (Brown-Chidsey &

Steege, 2010; Buffum et al., 2010; Kilpatrick, 2015; Shaywitz & Shaywitz, 2020; Spear-Swerling, 2022; Buffman et al., 2011). Studies of students who are English-language learners have shown that oral language interventions can be highly effective in preschool and kindergarten (Wang, 2021). Since oral language is highly correlated with reading success, identifying, and implementing interventions aimed at increasing a child's oral language has significant implications regarding academic success (Kelley et al., 2020; Wang, 2021).

The efficacy of early intervention as critical to student success in all academic areas is widely accepted as studies clearly show that intervening early can help close the achievement gap and set students on a path to success (Brown-Chidsey & Steege, 2010; Buffum et al., 2010; Gillon et al., 2023; Hougen & Smartt, 2012; Kilpatrick, 2015; Siegel, 2020; Spear-Swerling, 2022). According to Fisher et al. (2016), the effect size for RTI is 1.07, far above the .40 needed to indicate that this approach is effective and impacts student success. In the RTI model, students are screened universally to identify anyone at risk of reading difficulties (Brown-Chidsey & Steege, 2010; Buffum et al., 2010; Fisher et al., 2016; Kilpatrick, 2015). Once identified, students are provided with evidence-based interventions, and progress is monitored to ensure the child responds to the intervention (Fisher et al., 2016; Kilpatrick, 2015).

Screening tools should be quick and easy to administer and yield immediate results that can be used for grouping students and planning interventions (Fisher et al., 2016; Kilpatrick, 2015; Buffman et al., 2011). All students should receive high-quality core instruction with targeted interventions designed to help students identified as at-risk for poor reading outcomes (Buffum et al., 2010; Fisher et al., 2016; Buffman et al., 2011). While there are few models of language intervention currently in use for classroom intervention, the method of instruction that is most beneficial and garners strong results across domains is the direct instruction model

(Archer & Hughes, 2011; Brown-Chidsey & Steege, 2010; Buffum et al., 2010; Spear-Swerling, 2022).

Direct Instruction Model

Archer and Hughes (2011) direct instruction theory provides insight into the type of instruction needed to assist students in closing academic gaps in all areas, including language and vocabulary knowledge. When combined with understanding the various aspects of oral language as they relate to learning, comprehension, and writing, direct instruction provides a framework for understanding how vocabulary impacts cognitive development. The direct instruction model is grounded in the idea that direct teaching prevents misconceptions and strengthens and increases learning. Like the tenets of the theory proposed by Vygotsky (1930-1934/1978), direct instruction is based on more able peers or adults interacting and providing feedback to the learner (Archer & Hughes, 2011). In the direct instruction model, the teacher takes the students through a specific instructional sequence designed to move them from initial understanding to proficiency in skills and concepts. Learning is broken into manageable pieces with feedback during the learning cycle. Direct instruction is purposefully organized to move students toward more profound understanding and establishes clear objectives, goals, and models to ensure that students understand expectations. In addition, direct instruction provides clear examples of concepts taught and asks questions throughout the lesson to check for understanding (Archer & Hughes, 2011).

Another critical aspect of the direct instruction model is that the teacher consistently checks students' progress and works to move their knowledge toward mastery during the teaching and learning cycle (Archer & Hughes, 2011). Features associated with the direct instruction model include established goals that are articulated to students, sufficient time

allocated to instruction, extensive coverage of content, immediate feedback to students, and the teacher choosing goals and materials and controlling the pace of the lesson. Small group instruction provides direct and specific feedback to students. Direct instruction also uses examples and non-examples to clarify concepts, prompts to elicit student responses, choral responding, and the framework of the "I do", "we do", "you do" cycle (Archer & Hughes, 2011). In the "I do" portion, the teacher models the task. "We do" includes guided practice with students working with the teacher. The final step is the "you do" portion where students complete the task independently (Archer & Hughes, 2011). In a direct instruction model, students move from instruction to independence through a gradual release of responsibility as the students become more adept at completing the task. Direct instruction relies heavily on feedback from the teacher to clarify misconceptions and help the student integrate the learning into his or her thinking. Providing feedback helps students understand what is most important in completing the task, and teachers can link learning to the child's preexisting knowledge (Archer & Hughes, 2011).

Oral Language

Oral language is how humans communicate and process information (Hougen & Smartt, 2012). Oral language comprises expressive and receptive vocabulary and relies on syntax and meaning to convey thoughts. While reading and writing must be learned, oral language develops naturally as children hear language (Shaywitz & Shaywitz, 2020). Oral language plays a significant role in literacy development, as a person must know the sounds represented by the orthography or written symbol or symbols on the page and be able to attach meaning to words heard and read (Hougen & Smartt, 2012). Oral language also impacts social-emotional functioning and cognition (Fisher & Frey, 2018; Hougen & Smartt, 2012). While oral language

typically develops before reading and writing, reading, writing and oral language contribute reciprocally (Hougen & Smartt, 2012). As children learn to read and write, their oral language impacts comprehension and their ability to learn unfamiliar words and vocabulary. Integrating novel words into a well-developed vocabulary system or schema is easier if one understands how words fit together and what the words mean (Hougen & Smartt, 2012).

This reciprocal process continues throughout the life cycle, as receptive understanding helps with listening and reading comprehension and expressive language impacts the ability to speak and write (Hougen & Smartt, 2012). According to research, direct instruction in the receptive and expressive vocabulary components of language assists children in speaking, reading, and writing and improves comprehension (Hougen & Smartt, 2012). Receptive and expressive language develops from hearing and using oral language, particularly with models provided by more accomplished peers or adults who provide feedback and correction as the child speaks. By understanding the elements of oral language, teachers can better meet students' needs and provide appropriate feedback designed to move students to higher levels of oral language. According to research, the elements of oral language are phonology, morphology, semantics, syntax, and pragmatics (Fisher et al., 2016; Hougen & Smartt, 2012). Understanding these elements and how they impact cognition is essential in understanding the best ways to support oral language development.

Phonology refers to the sounds of language and how sounds are combined, which directly impacts phonemic awareness, a critical precursor to the development of decoding (Fisher & Frey, 2018; Hougen & Smartt, 2012). Students with deficits in phonemic awareness have a high likelihood of difficulty decoding unknown words (Kilpatrick, 2015; Spear-Swerling, 2022). There are 26 letters in the English alphabet that can represent the 44 phonemes or speech sounds

in the English-language (Hougen & Smartt, 2012; Spear-Swerling, 2018). There are 250 different ways to represent those phonemes by combining letters (Hougen & Smartt, 2012; Spear-Swerling, 2018). Phonology, however, is also used to differentiate meaning, as one change in a phoneme can result in a change in meaning (Hougen & Smartt, 2012). For example, the word "mop" becomes "map" with the vowel change.

Morphology relates to meaning (Fisher et al., 2016; Hougen & Smartt, 2012). Individual parts of words are combined to create meaning (Hougen & Smartt, 2012). There are two types of morphemes in English: free morphemes and bound morphemes. Free morphemes carry meaning independently, while bound morphemes must be combined in some way to carry meaning (Fisher & Frey, 2018; Hougen & Smartt, 2012). Words like dog, happy, home, and run represent free morphemes. The word's meaning changes when bound morphemes are added to the words. For example, "dog" becomes "dogs" with the addition of "s," and "happy" becomes "unhappy" with the prefix "un" added (Hougen & Smartt, 2012).

English is considered a morphophonemic language, because it is based on the relationship between sound and meaning (Moats, 2003). This is because English is a mixture of various languages, containing attributes of analytic or isolating languages and some residual characteristics of agglutinative language (Kargin et al., 2022; Moats, 2003). Analytic language uses the order of words in a sentence to convey meaning and not simply the words themselves. This includes prepositions and prepositional phrases, which directly impact meaning. Agglutinative languages are highly regular regarding meaning and have bound and free morphemes that combine to alter meaning. Since English combines words from Old English, German, Spanish, French, Greek, and Latin, comprehension of language depends on understanding the subtle differences between words, affixes, tenses, and modifiers that shape

meaning within sentences. This combination of features makes English challenging to comprehend without exposure to a wide range of vocabulary and sentence structures. Comprehension of language and vocabulary knowledge has a significant impact on reading comprehension (Kargin et al., 2022). Kargin et al. (2022) found that students with difficulty with reading comprehension often have underlying vocabulary deficits, including difficulty understanding tense, semantics, and pragmatics within language.

Semantics is the understanding of word meanings in different contexts and assists the speaker with understanding which word to use to convey the appropriate meaning (Fisher et al., 2016; Hougen & Smartt, 2012). Words may have multiple meanings, depending on the placement in the phrase or sentence and the context in which they are used (Hougen & Smartt, 2012). For example, in "take a bow" or "tie a bow," the word pronunciation and meaning change due to context. Knowledge of semantics helps when relating terms to one another, understanding how categories of words fit together, and choosing the correct word to express meaning (Fisher & Frey, 2018; Hougen & Smartt, 2012). Individuals with strong semantic understanding can convey a message and choose the appropriate word to articulate a message (Hougen & Smartt, 2012). For example, understanding the subtle differences between synonyms can help the speaker or writer decide if the appropriate word might be ecstatic instead of happy. These shades of meaning impact expressive and receptive vocabulary (Fisher & Frey, 2018; Hougen & Smartt, 2012).

Syntax is commonly considered grammar (Fisher & Frey, 2018; Hougen & Smartt, 2012). Syntax is related to the knowledge of rules that cover the order of words in a specific language (Hougen & Smartt, 2012). This is one reason that it can be challenging to learn a second language, as syntax varies between languages. Syntax develops through listening to

models in early childhood and later through reading, writing, and instruction and plays a huge role in language comprehension (Fisher & Frey, 2018; Hougen & Smartt, 2012). Children often understand language structure before they integrate the structures into their expressive vocabulary; however, having a strong receptive vocabulary that understands syntax is highly beneficial to listening comprehension as well as for reading and writing development (Hougen & Smartt, 2012).

Pragmatics is understanding when and how to use a specific word or phrase to fulfill a purpose (Fisher & Frey, 2018; Hougen & Smartt, 2012). Different words and phrases serve different purposes in language (Hougen & Smartt, 2012). For example, asking a question is pragmatically different from making a statement. Pragmatics incorporates aspects of semantics (vocabulary) and syntax (phrasing) to convey a message (Fisher & Frey, 2018; Hougen & Smartt, 2012). Children learn pragmatics by listening to others and through modeling by adults or more advanced speakers. Understanding the pragmatic function of language impacts comprehension and influences both expressive and receptive language acquisition (Hougen & Smartt, 2012). Understanding all aspects of language acquisition and development is critical for addressing language proficiency gaps early and effectively.

Language Intervention Studies

Support for language intervention and instruction in the earliest grades continues to grow (Coyne et al., 2022; Gillon et al., 2023; Kelley et al., 2020). Gallagher et al. (2019) found that when the teacher and speech pathologist work collaboratively to meet the needs of students with specific language impairments, learning increases, and students are less likely to fall behind. Coyne et al. (2022) examined the long-term effects of vocabulary intervention on kindergarten students by tracking those children through the second grade, where most maintained the gains

seen in kindergarten. According to Fisher et al. (2016), direct, intentional teaching of vocabulary in preschool and kindergarten found an effect size of .88, more than twice as large as needed to indicate effectiveness. Other studies examined the link between socioeconomic status, language input, and student achievement for students ages five to 10 (Merz et al., 2020). The results indicate that interventions aimed at improving students' oral language from low socioeconomic backgrounds could impact the structural development of language centers in the brain and contribute to accelerated achievement for these students (Merz et al., 2020). Many studies point to language delays in early childhood to explain the issues related to language and reading and listening comprehension (Walker et al., 2020).

Coyne et al. (2022) examined the effects of directly teaching kindergarten and preschool students' academic vocabulary words. They found that students at risk for reading difficulties who were provided with small group vocabulary instruction in kindergarten outperformed the control group at the end of kindergarten and continued to significantly outperform the control group in second grade, indicating that the early instruction provided long-term benefits in most students (Coyne et al., 2022). Other research concurs that when vocabulary intervention is carefully designed and implemented with fidelity, students' vocabulary development increases rapidly (Kelley et al., 2020). The issue, according to Kelley et al. (2020), is that early childhood teachers need to be provided with programs or training to assist students who struggle in the language domain.

Other studies have used technology and professional development to provide language intervention to at-risk students, such as those from high-poverty backgrounds and English-language learners and did not note a significant impact (Vatalaro et al., 2018; Wasik & Hindman, 2020). Two studies took place in Head Start preschool classrooms and focused on leveraging

technology and professional development. The first used iPads and mobile media apps to improve preschool students' expressive and receptive vocabulary, and the second used Story Talk interactive storybooks created by Wasik and Hindman (2020) and an experimental group where materials and training were provided to teachers along with a control group of schools where teachers were provided with program materials but no professional development.

Findings on the posttest found that the scaffolding apps improved receptive vocabulary; however, the open-ended narration apps had little to no impact on receptive or expressive vocabulary or overall language proficiency (Vatalaro et al., 2018). The second study, which utilized Story Talk (Wasik & Hindman, 2020) interactive stories, examined the differences between classrooms where teachers received the materials and classrooms where teachers received the materials and training. The results showed that while progress monitoring scores indicated improvement in the classrooms where teacher training took place, scores on standardized measures such as the PPVT-5 (Dunn, 2019) found a small effect size and was not indicative of a significant difference between groups (Wasik & Hindman, 2020). Both Vatalaro et al. (2018) and Wasik and Hindman (2020) believed that as the field of apps and technology continues to grow and these become more prevalent and easier to use, this could be one way to help close the vocabulary gap between children in poverty and their more affluent peers when used in developmentally appropriate ways. Both sets of researchers also indicated that results might have been impacted by the starting level of students in the study, who, in both cases, were significantly below the typical expectation for vocabulary development (Vatalaro et al., 2018; Wasik & Hindman, 2020). While the two previous studies focus on students from high-poverty backgrounds, many English-language learners fall into both categories (Sanabria et al., 2022).

English-language learners (ELLs) who enter preschool and kindergarten with limited English proficiency risk falling behind their native English-speaking peers and are more likely to live in poverty (Sanabria et al., 2022). According to NAEP (2022), only 10 % of typically developing English-language learners were considered proficient readers at the end of fourth grade. Research indicates that even when decoding improves, English-language learners often still score below their peers in reading comprehension (Sanabria et al., 2022). While many programs exist that assist students in developing language comprehension in English, programs such as Enhanced Moved by Reading to Accelerate Comprehension in English (EMBRACE), described by Sanabria et al. (2022), which includes multi-modal learning to aid the student in constructing concrete mental models, have compelling evidence to support the integration of sensory-motor and language learning. As with previous studies, researchers attempted to use a combination of technology and professional development to aid in closing the gap between native English speakers and ELLs using EMBRACE (Sanabria et al., 2022).

EMBRACE (Sanabria et al., 2022), uses iPad stories and pictures to teach language and vocabulary concepts. However, in the study conducted by Sanabria et al. (2022), the EMBRACE intervention did not demonstrate effectiveness as the researchers had expected. While the sample size was small and analysis was conducted on overall improvement, this program failed to meet the criteria as evidence-based and beneficial in the elementary school setting for ELLs (Sanabria et al., 2022). While some studies on language intervention focus on children of poverty and more often on ELLs, others focus on students with language-based disabilities (Alt et al., 2019).

Dyslexia is a language-based learning disability that is often viewed as a decoding issue (Shaywitz & Shaywitz, 2020). Alt et al. (2019) conducted a study based on the supposition that children with dyslexia have deficits in phonology that impact spoken word knowledge and that

dyslexia and developmental language disorder occur together in some cases. The researchers hypothesized that both dyslexics and dyslexics with developmental language disorder would score below their typically developing peers, but dyslexics would struggle with phonology, while dyslexics with developmental language disorder would have greater difficulty with both phonology and semantic processing that impacts word learning. While both dyslexia and developmental language disorder occur separately, there is a growing body of evidence indicating that these can and do co-occur more often than previously believed (Alt et al., 2019).

Students in this study were selected and placed into groups as dyslexic, dyslexic and developmental language disordered, or typically developing based on scores to various assessments such as hearing and vision screening and other achievement tests (Alt et al., 2019). Students then participated in games and tasks on digital media that focused on phonology, semantics, and orthography. While students with dyslexia and those with both dyslexia and developmental language disability scored lower than typical peers on all areas assessed, students with dyslexia and developmental language disabilities consistently scored lower than dyslexic students on tasks involving word length and phonological-visual linking. The researchers' conclusions indicate that identifying the co-occurrence of dyslexia and developmental language disability is imperative for students. Understanding the differences between the groups would allow for more targeted, appropriate instruction and early intervention. While students with dyslexia may have difficulty learning and reading unfamiliar words, students with both dyslexia and developmental language disorder will struggle with linking words to actions. Understanding the differences in the way students process words at the phonological and semantic levels can aid teachers in helping these students become proficient readers and speakers (Alt et al., 2019).

While the effectiveness of early intervention has been extensively documented, interventions targeting vocabulary development in early childhood and during the first few years of formal schooling have indicated mixed results at best (Coyne et al., 2022; Vatalaro et al., 2018; Wasik & Hindman, 2020). It seems clear from the research that direct vocabulary instruction has yielded better results than computer or app-based programs. However, the training needed to implement instruction and ways for teachers to identify students who may need assistance in vocabulary development and track progress over time remains in question (Coyne et al., 2022; Kelley et al., 2020). As vocabulary in kindergarten is highly correlated to reading comprehension scores in third grade and may even impact the ability to read, spell, and remember words, this area of development needs to be examined more closely to prevent gaps in vocabulary, language, and achievement from continuing to expand as students move through elementary school and beyond (Coyne et al., 2022; Kelley et al., 2020; Snowling & Hulme, 2021).

Summary

According to the sociocultural theory of Vygotsky (1930-1934/1978), later expanded upon by Hill (2019), oral language plays a significant role in cognitive development. Direct instruction is predicated upon the teacher's ability to break learning down into small increments and provide immediate feedback to minimize misconceptions, thus reducing the cognitive load and improving the odds that learning will be moved from short-term working memory into long-term storage (Archer & Hughes, 2011; Miller, 1956). Students assimilate or accommodate new learning into the schema to make sense of the world and their experiences (Piaget & Inhelder, 2000; Singer & Revenson, 1996).

The debate between educators who favor balanced literacy and those who support structured literacy based on the science of reading continues, and many states have implemented universal

screening measures to identify students at risk for reading difficulties so teachers and schools can intervene early to prevent reading difficulties (Brown-Chidsey & Steege, 2010; Castles et al., 2018; Eklund et al., 2018; Goldberg & Goldenberg, 2022). However, most universal screening measures only examine word recognition (Kilgus et al., 2018). Vocabulary and reading comprehension are typically examined in upper elementary school when students must learn more advanced vocabulary (Kilgus et al., 2018; Kilpatrick, 2015; Spear-Swerling, 2018). However, if children lack basic vocabulary, this creates an issue when attempting to accommodate or assimilate new vocabulary into the existing schema and increases the cognitive load as new categories must be formed without a basis for understanding (Dehaene, 2009; Dewitz & Graves, 2021; Dolean et al., 2019; Goldberg & Goldenberg, 2022; Hill, 2019; Hougen & Smartt, 2012; Jones et al., 2019; Levine et al., 2020; Piaget & Inhelder, 2000).

While studies exist that focus on vocabulary gaps found between children of poverty and their more affluent peers, as well as ELLs and students with disabilities, studies of the efficacy of language or vocabulary intervention during the first two years of school, kindergarten, and first grade, are rarely found and have shown inconclusive results (Snowling & Hulme, 2021; Yeung et al., 2020). In addition, ways to identify and track student progress offer little to help identify students or determine the effectiveness of language or vocabulary intervention (Schmitt et al., 2017). Nevertheless, this is a fundamental tenant of structured literacy instruction and the simple view of reading, as shown in Figure 2 (Gough & Tunmer, 1986) and Scarborough's Rope (2001) shown in Figure 3. While the vocabulary gap has been shown to contribute to the achievement gap that exists between children, there are no universal programs designed to address this area in schools unless the child has a specific language disability or speaks a language other than English at home (Alt et al., 2019; Vatalaro et al., 2018). According to Snowling and Hulme (2021), a gap exists in the research and literature regarding

universal assessment and interventions for vocabulary deficits in the early grades and what, if any part, direct instruction in critical aspects of vocabulary development could play in ensuring students have the expressive and receptive language skills to understand what they read.

CHAPTER THREE: METHODS

Overview

The purpose of this quantitative, quasi-experimental, pretest-posttest, non-equivalent control group study was to examine the effect of specific language-based interventions on accelerating the receptive and expressive vocabulary proficiency of kindergarten and first-grade students identified as having deficits in this area. After the rationale for this research design is presented, the research questions and hypotheses are listed. A detailed description of the population, the study participants, and the setting is provided. Finally, the instrumentation and data analysis procedures are described.

Design

This study employed a quantitative, quasi-experimental, pretest-posttest, non-equivalent control group design with kindergarten and first-grade students who scored a standard score of 85 or below on receptive and expressive vocabulary measures. Quasi-experimental research is often used in education and other social sciences, where researchers are attempting to ascertain answers to questions about the relationship between variables (Butin, 2010; Gall et al., 2007). In a pretest-posttest design, researchers track changes in data to determine the effect of a specific intervention or independent variable (Gall et al., 2007). In this design, students are assessed using a pretest prior to the intervention and again at the end of the study with the posttest. The use of a pretest allows researchers to identify pre-existing differences between groups and the use of ANCOVA assists in controlling these differences. The pretest-posttest design also provides a way to measure change over time and can help determine if an intervention was effective in an educational setting and measure individual and group growth. According to Gall et al. (2007), when appropriately executed, the pretest-posttest design can control for eight

threats to internal validity. These include selection-maturation interaction, history, experimental morality, maturation, differential selection, testing, statistical regression, and instrumentation. One drawback to this design is that exposure to the pretest can alter the results. If there is a similarity between the pretest and posttest, exposure to its content can impact results (Gall et al., 2007).

A non-equivalent group design is like a true experimental design, except the groups are not randomly assigned (Butin, 2010; Gall et al., 2007). Therefore, the quasi-experimental design was appropriate for this study because students were not randomly assigned. Students were assigned to two groups, one that received the treatment and one that did not, with both given a pretest and posttest. The pretest-posttest design was selected to determine if a causal relationship existed between the independent and dependent variables (Gall et al., 2007). For that reason, the other experiences of both the experimental and the control group were as similar as possible to determine if the treatment given to the experimental group resulted in statistical significance (Gall et al., 2007).

The pretest-posttest design allowed data to be collected and compared to the non-participating control group. Standard scores were compared once data from both the pretest and posttest was gathered. Examining the posttest scores allowed for conclusions about the correlation between variables while controlling for variance in pretest scores for the intervention and control groups (Gall et al., 2007). In this study, the independent variable was participation in the language intervention program Story Champs (Language Dynamics Group, 2019; Spencer & Peterson, 2018), an evidence-based language intervention for pre-kindergarten to third-grade students that provided lesson plans and materials for targeted language intervention in basic story structure, informational text structure, language complexity, vocabulary, and written expression

in small group settings (Spencer & Peterson, 2018). The dependent variables were kindergarten and first-grade students' posttest scores on the Peabody Picture Vocabulary Test 5th edition (Dunn, 2019) and Expressive Vocabulary Test 3rd edition (Williams, 2019). The target students selected for the intervention scored at or below the standard score of 85 on the PPVT-5 receptive vocabulary measure and the EVT-3 expressive vocabulary measure. These students were provided with intervention using the language intervention program Story Champs, which used stories, pictures, and activities designed to improve receptive and expressive vocabulary (Language Dynamics Group, 2019; Spencer & Peterson, 2018). The first dependent variable was the posttest scores on the PPVT-5, an assessment of receptive vocabulary, defined as all the words an individual hears and understands (Dunn, 2019). The second dependent variable was the posttest on the EVT-3, which assessed expressive vocabulary, defined as all the words an individual uses to convey meaning (Williams, 2019). In both analyses, the covariate was the pretest scores on the PPVT-5 and EVT-3. These assessments are often used to determine an individual's overall vocabulary and language proficiency (Pearson Publishing, 2022).

Research Questions

RQ1: Is there a statistically significant difference in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest standard scores?

RQ2: Is there a statistically significant difference in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest standard scores?

Hypotheses

The null hypotheses for this study are as follows:

Ho1: There is no statistically significant difference in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program when controlling for pretest standard scores.

Ho2: There is no statistically significant difference in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program when controlling for pretest standard scores.

Participants and Setting

This section contains detailed information about the participants and the study's setting. It describes the population and explains participant criteria. The section ends with a description of the study's setting.

Population

The participants for this study were drawn from a convenience sample of kindergarten and first-grade students at a Title I designated elementary school in western South Carolina. The school has a poverty index of 71% and is part of a large school district with a diverse population (Aiken County School District [ACPSD], 2023). There are 21 elementary schools in the district, all of which have Title I designation, meaning that at least 40% of students live in poverty. However, the percentage ranges from 45% to 90% on the poverty index. Though ELLs do not make up a substantial percentage at the research site, other schools in the district have large populations of Spanish-speaking students. Historically, gaps between children of poverty and their more affluent peers have persisted despite the implementation of district-wide intervention programs in all elementary, middle, and high schools. Many students also live in single-parent

households, receive government housing and assistance, and are raised by a grandparent or great-grandparent (ACPSD, 2023).

Assessment data from the beginning of the year on general reading composite scores made up of phonemic awareness and rapid letter naming assessments, indicated that upon kindergarten entry, 46% of students assessed were at-risk for reading difficulty (Fastbridge Illuminate Education, 2023). When subgroups were examined, 37% of White students, 20% of students identified as Multiracial, and 45% of Black students were at-risk for reading difficulty, indicating that they scored below the 40th percentile on these assessments. An examination of first-grade entry scores for the fall of 2023 indicated that 42% of all students entering first grade were at risk of reading difficulty. Subgroup details indicated that 29% of White students, 40% of Multiracial students, and 27% of Black students fell into the at-risk category in general reading composite scores (Fastbridge Illuminate Education, 2023). There is no subgroup identified as Hispanic/Latino in the data. However, there are Hispanic/Latino students in the school, but parents self-identify, and none of the parents chose Hispanic/Latino on demographic information forms.

Participants

A convenience sample was used to select participants for this study: kindergarten and first-grade students enrolled in the target elementary school. Since the participants were from a convenience sample, results may be generalized only to similar populations (Warner, 2021). All kindergarten and first-grade students were assessed using the PPVT-5 (Dunn, 2019). Any student who scored at or below a standard score of 85 on the PPVT-5 (Dunn, 2019) was administered the EVT-3 (Williams, 2019). Students testing at or below the standard score of 85 on the EVT-3 (Williams, 2019) and the PPVT-5 (Dunn, 2019) were considered for inclusion in the study.

For this study, the participants sampled were initially 100 students divided into two groups. Fifty students formed the control group, and 50 students formed the experimental or treatment group. According to Gall et al. (2007), this number exceeds the 33 per group minimum required when assuming a medium effect size with a statistical power of .07 at the .05 alpha level for a one-way analysis of covariance (ANCOVA). However, due to attrition, truancy, and placement into special education settings during the study, 70 students divided into two groups of 35 had data included.

The treatment group included 15 female and 20 male participants, 18 Black students, 15 White students, and two who identified as another or more than one race. The group also included 22 kindergarten students and 13 first-grade students. Of these, 18 students lived with both parents, 12 with one parent, and 5 with another relative. Two students in the treatment group were classified as homeless.

There were 10 female and 25 male participants in the control group, with 16 Black students, 15 White students, and four identified as another or more than one race. There were 18 kindergarten students and 17 first-grade students in the control group. There were 15 students in the control group who lived with both parents,16 lived with one parent, and four lived with another relative. One student in the control group was classified as homeless.

Setting

The setting for this study was Title 1 designated elementary school (ACPSD, 2023). The school is in a suburban area and has partial magnet status as a school of the arts, having received the designation of art in the basic curriculum school and grant funding for art classes, including full-time drama and dance teachers. This means that while the school has an attendance zone, spaces above the base attendance zone numbers are available for students who choose to come to

the school. Most students at this school are defined as at-risk based on socioeconomic status. Student demographic data gathered from the school indicates that 47% are Black, 48% are White, and 2% of students are classified as other or multiple races. During the study, 84 students were enrolled in first grade and 77 were enrolled in kindergarten at the school where the study was conducted (ACPSD, 2023).

The Story Champs Language Intervention program (Spencer & Peterson, 2018), was delivered by two reading interventionists and the literacy coach/researcher in a small group pull-out intervention program. Groups varied in size from four to six students per group, with the intention of seeing students four days per week for 30-minute sessions. The researcher and interventionists were able to see groups four times per week most weeks, however, lack of substitutes, illnesses, and meetings outside of the school building occasionally interfered with the ability of interventionists to pull groups four times per week. An examination of attendance records indicated that over the 12-week period, students averaged 3 sessions per week. Scheduling conflicts prevented make-ups of lost intervention sessions.

Groups were picked up from their classrooms and taken to the interventionist's classroom for instruction, then returned to their classrooms at the end of each session. The school's master schedule had one hour daily for intervention and enrichment in each grade level band. All pull-outs occurred during the designated hour, to ensure that students did not miss whole group academic instruction.

To ensure the successful implementation of Story Champs, the researcher underwent online training through Language Dynamics (refer to Appendix G), the publisher of the program. Afterward, the two interventionists implementing Story Champs (Spencer & Peterson, 2018) were trained by the researcher to use the scripted lesson plans and materials provided with the

Story Champs intervention kits. The placement of students into groups was determined by reviewing data from the PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019), with students of similar scores being placed together. The researcher and intervention team collaborated on lesson planning and met weekly to review progress. Additionally, the researcher observed Story Champs lessons every other week for all groups. Each interventionist kept attendance records for all students in the intervention to ensure that they were receiving their documented interventions.

Instrumentation

Two instruments were used to assess receptive and expressive vocabulary in kindergarten and first-grade students: the PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019). Pearson Publishing Company publishes both assessments, these measures are often combined to assess receptive and expressive vocabulary in students. Permission to use these assessments can be found in Appendix C.

The PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019) have alternate forms, A and B, which can be used to monitor progress or as a pretest/posttest option. The PPVT-5 is administered before the EVT-3; the same form must be used for each. For the pretest and posttest, form A was used. Retesting is recommended after the individual has moved into the next normative group, with at least 15 days (about 2 weeks) between the initial test and retest (Dunn, 2019; Williams, 2019). Normative data is divided into three-month bands; 14 weeks (about 3 months) passed between the pretest and posttest, with all students having moved at least one normative band.

The Peabody Picture Vocabulary Test - 5th Edition

The PPVT-5 assesses receptive vocabulary in individuals between 2.6 to 90 or more years of age (Dunn, 2019). The PPVT-5 was used to gather data on the dependent variable

receptive vocabulary in research question one (Dunn, 2019). This assessment aimed to measure receptive vocabulary acquisition and identify areas of strength and weakness. The PPVT-5 can be used to identify possible language-based learning disabilities and is among the most used assessments to measure verbal ability in American English (Dunn, 2019).

Created initially to assess verbal intelligence in 1959, the original PPVT had only one set of questions. In 1981, the PPVT was revised to create the PPVT-R, which included revisions that allowed verbal and non-verbal responses, two equivalent testing forms, and a quick administration guide. In the early 1990s, the PPVT-R was revised to create the PPVT-III and featured updated questions and pictures. In 2007, the fourth edition of the PPVT was created and featured two versions of the assessment and larger, full-color illustrations. The PPVT-5 was published in 2019 and updated to include changes in the English language, and include changes for English-language learners, and students with Autism Spectrum Disorder and other disabilities (Dunn, 2019). The PPVT (Dunn, 2019) has been used in multiple studies, including studies by Lesniewska et al. (2018), Tamis-LeMonda et al. (2019), and Vatalaro et al. (2018).

The construct validity of the PPVT-5 (Dunn, 2019) indicates that when correlated with other measures the PPVT-5 was found to have .75 correlation with the Clinical Evaluation of Language Fundamentals (CELF) Preschool 2, .68 correlation with CELF-5 Core Language scores (Wiig et al., 2013), and .46 correlation with Kaufman Test of Educational Achievement [KTEA-3] (Kaufman & Kaufman, 2014). Clinical validity studies for special populations were 1.93 for language delays, 1.66 for speech and language impairment, .90 for speech-language disability in reading and writing, .81 for students with autism, and .89 for individuals with hearing impairment and Cochlear implants. In addition, the PPVT-5 shows a -1-standard

deviation (SD) of 15 points when used as a screening tool. The correlation with other measures indicates that the PPVT-5 is a valid measure of receptive vocabulary (Dunn, 2019).

Reliability data indicates that the PPVT-5 has a .97 overall reliability of the normative sample, indicating that the PPVT-5 exhibits high levels of reliability (Dunn, 2019). Alternate form reliability is .8, indicating that alternate forms produce consistent results. The test-retest reliability for all ages is .88, meaning that the PPVT-5 shows consistent results when taken over time. The PPVT-5 scores are based on population studies where English was the first and primary language. Though instructions indicate that analysis of home versus school versus science, technology, engineering, and mathematics (STEM) can be performed manually, no subscales impact overall language proficiency standard scores (Dunn, 2019).

The PPVT-5 (Dunn, 2019) consists of 240 items divided into sets of increasing difficulty. Children are shown an array of four pictures with numbers 1 to 4 on them, then the examiner says a stimulus word, and the child either states the number of the picture that is the correct answer or points to the picture. Each correct item is scored 1-point, incorrect items are scored 0, and questions not administered are marked with a slash (Dunn, 2019). The test is discontinued when six out of eight items are incorrect (Pearson Publishing, 2022). The PPVT-5 (Dunn, 2019) assesses receptive or hearing language in the following subtest areas: home vocabulary; school vocabulary; parts of speech, including nouns, verbs, and attributes; Tier 1, 2, and 3 vocabularies, and science, technology, engineering, and math (STEM) vocabulary (Dunn, 2019; Resources for Early Learning [REL], 2023).

The PPVT-5 is an individually administered norm-referenced assessment (Dunn, 2019). The age range for the test is 2.6 to 90 or more years of age. The PPVT-5 was developed to examine semantics, word knowledge, and general language use. Scores are entered as raw data

with a range of 0 to 240. This raw data and the student's age are then converted into an age equivalency scale. Results are provided as age-level equivalents, standard scores, and percentile ranks, with 100 being average and a 15-point standard deviation. For this study's purposes, standard scores were used to determine placement. The test was administered by showing numbered pictures to the students. The examiner then said a stimulus word, and the student identified the picture from a field of four options. Typically, the time to administer the PPVT-5 was ten to 15 minutes, though administration varied based on the number of questions the student answered correctly. The test began at the student's chronological age and moved up or down based on the student's response. The assessment was stopped, or the ceiling score was reached when the student missed six consecutive questions (Dunn, 2019).

The school literacy coach/researcher and the school's intervention team were trained to administer the PPVT-5 (Dunn, 2019). The assessment was administered by members of the intervention team and the literacy coach during standard testing windows in the fall and winter of the 2023 to 2024 school year. Each testing window was from four to six weeks long. Scoring was done by hand, though a digital version exists. Once collected, responses were scored, and data was entered in a preformatted Excel spreadsheet to sort data and identify groups for instruction. All identifying information was removed, and any data with identifying information was stored in a locked file cabinet. Excel spreadsheets with students' names are maintained on a password-protected computer, and only members of the school intervention team have access to that data.

The Expressive Vocabulary Test - 3rd Edition

The study used the EVT-3 (Williams, 2019) to assess kindergarten and first-grade students' expressive vocabulary on the pretest. Students were then reassessed after the

intervention period was completed to track changes over time and determine if there was a positive response to intervention for students in the experimental group compared to the control group. In this way, the study aligned with previous studies on response to intervention. The EVT-3 was created as a companion to the PPVT-5 to assess expressive vocabulary. When scores on both these measures are combined, they create a profile of the individual's overall language achievement based on age, grade level, and nationally normed statistics (Dunn, 2019; Williams, 2019). The purpose of the EVT-3 is to assess the expressive vocabulary of individuals between the ages of 2.6 to 90 or more, though it is most used on students ages 2 to 18 (Williams, 2019).

The EVT-3 (Williams, 2019) is a norm-referenced, expressive vocabulary test and word retrieval assessment first created in 1981 as part of an effort to find a companion product that would assess expressive vocabulary and could be aligned with the PPVT-R (Pearson Publishing, 2022) to create a more complete profile of overall language proficiency. In 1990, the EVT (Williams, 2019) was revised along with the PPVT-R (Dunn, 2019) based on examiner feedback and William's work as a speech and language pathologist in schools (Pearson Publishing, 2022). In 1997, the EVT (Pearson Publishing, 2022) added color drawings as a stimulus and allowed for one-word responses, but only had one form. In 2007, an additional revision was created featuring two equivalent forms and adding functional language questions to create the EVT-2 (Williams, 2019). The current version, EVT-3 (Williams, 2019), includes updated drawings and a digital version and reflects changing demographics in the United States and practitioner feedback (Pearson Publishing, 2022). Multiple studies have used the EVT-3 (Williams, 2019) in research. These studies include research by Conner et al. (2022), Mancilla-Martinez et al. (2020), Bogue et al. (2014), and Schworer et al. (2022).

Studies of validity measures for the EVT-3 (Williams, 2019) found high levels of correlation with similar assessments across populations (Pearson Publishing, 2022). The Clinical Evaluation of Language Fundamentals preschool edition (CELF Preschool 2; Wiig et al., 2013) and the EVT-3 (Williams, 2019) correlate .77 (Pearson Publishing, 2022). The Clinical Evaluation of Language 5th edition [CELF-5] (Wiig et al., 2013) and the EVT-3 (Williams, 2019) have a .67 correlation, and the Kaufman Test of Educational Achievement [KTEA-3] (Kaufman & Kaufman, 2014) Brief Achievement Composite has a .52 correlation with the EVT-3 (Pearson Publishing, 2022; Williams, 2019). Clinical studies for the EVT-3 (Williams, 2019) validity with special populations indicate 7.92 for language delays, 1.64 for speech and language impairment, 1.27 for speech and language delay in writing, .63 for students with autism, and .61 for individual who are hearing impaired with Cochlear implants (Pearson Publishing, 2022; Williams, 2019) The EVT-3 (Williams, 2019) can be used with individuals ranging from 2.6 to 90 or more years of age.

Reliability data indicates that the EVT-3 (Williams, 2019) has a .97 overall reliability of the normative sample, indicating that the EVT-3 exhibits high levels of reliability (Pearson Publishing, 2022). Alternate form reliability is .9, indicating that alternate forms produce consistent results. The test-retest reliability for all ages is .89, meaning that the EVT-3 (Williams, 2019) test shows consistent results when repeated at one-year intervals. This test-retest reliability indicates that the EVT-3 (Williams, 2019) fits the pretest-posttest design well. The test is discontinued when 6 out of 8 items are incorrect (Pearson Publishing, 2022).

There are 190 items on the EVT-3 (Williams, 2019) and two separate forms, allowing for progress monitoring. The measure assesses expressive vocabulary on the following subscales: home and school vocabulary; parts of speech, including nouns, verbs, and attributes; Tier 1, 2,

and 3 vocabularies; and science, technology, engineering, and math (STEM) vocabulary (Williams, 2019). A perfect score on the measure would be 190. Scores are entered as raw data, with one point for each correct answer (Pearson Publishing, 2022; Williams, 2019). Students are scored 1 for correct responses and 0 for incorrect responses, and a slash indicates that the item was not administered. The raw scores and the student's age are recorded on the score sheet and converted into an age equivalency scale. Results are provided as age-level equivalents, standard scores, and percentile ranks, with 100 being average and a 15-point standard deviation.

According to Williams (2019), the PPVT-5 (Dunn, 2019) should be administered before the EVT-3 (Williams, 2019), and the same form should be used for both. So, if Form A of the PPVT-5 (Dunn, 2019) is used, then Form A from the EVT-3 (Williams, 2019) should be used. The EVT-3 (Williams, 2019) provides age-recommended starting points to shorten testing administration. The appropriate starting point is found when the student responds correctly to three items in a row, indicating this is the age-equivalent starting point. Students are shown a stimulus picture that corresponds to a stimulus question. The stimulus questions must be read exactly as written in the manual. The assessment ends when the individual responds incorrectly to six consecutive items (Williams, 2019). The EVT-3 (Williams, 2019) takes 10 to 15 minutes to administer, can be used with individuals 2.6 to 90 or more years of age, and is administered individually to students (Williams, 2019).

Training to administer the earlier version of the EVT (Williams, 2019) was provided to the school literacy coach in 2003. Permission to use the EVT-3 for the study can be found in Appendix C. The EVT-3 assessment was administered by the literacy coach/researcher during standard testing windows in the fall and winter. Each testing window was from four to six weeks long. All scoring was completed by the literacy coach, who entered the raw data into a

spreadsheet and then converted the raw scores into standard scores. Scoring was done by hand. Data was sorted, and students were identified for placement in either the experimental group or control group based on standard scores on the EVT-3 (Williams, 2019) and the PPVT-5 (Dunn, 2019).

Procedures

After receiving the Liberty University Institutional Review Board (IRB) approval, data was collected using the PPVT-5 and the EVT-3. IRB approval was needed because this study included human participants (see Appendix D for the IRB approval form). Once IRB permission was obtained, the request for research and the IRB permission letter were submitted to the school district for approval (see Appendix B for the district approval letter). The school's interventionists and the literacy coach/researcher administered the PPVT-5 (Dunn, 2019), and the literacy coach/researcher administered the EVT-3 (Williams, 2019) to students who scored below the standard score of 85 on the PPVT-5 (Dunn, 2019). While all students received targeted intervention or enrichment based on the universal screening measure Fastbridge Illuminate Education (2023), in their classrooms or with an interventionist, students selected for inclusion in the Story Champs intervention group received that specific intervention in the pull-out program with their designated interventionist. Parental consent and student assent forms were sent home seeking permission to participate in Story Champs (Spencer & Peterson, 2018) and use the data collected by the PPVT-5 (Dunn, 2019) and EVT-3 (Williams, 2019) in this research study.

Data was collected using the PPVT-5 (Dunn, 2019) twice during the 2023-2024 school year. The EVT-3 (Williams, 2019) was administered to any kindergarten or first-grade student whose standard score on the PPVT-5 (Dunn, 2019) was 85 or below. Those with vocabulary scores below the standard score of 85 on both measures were ranked from lowest to highest.

Students were then identified to participate in the intervention group or the control group, notification of intervention forms as shown in Appendix F, and parent consent forms were sent home after IRB approval. Under the South Carolina Read to Succeed Act (SCDE, 2023), the school is legally obligated to intervene with all students not meeting grade level expectations. Students were ranked based on standard scores from lowest to highest. Beginning with the lowest scores on both assessments, 50 students were initially selected to be in the intervention group, 50 students originally composed the control group, and parent consent, along with student assent forms for participation in the study, were sent home (see Appendix A for parental consent forms, Appendix K and Appendix L for child assent forms). Once students who participated in the study were identified, intervention plans, including Story Champs, were written to document the intervention as required by the South Carolina Read to Succeed Act (SCDE, 2023). Per the Read to Succeed Act, students may not opt out of intervention; however, parents could choose to opt out of participation in a study (SCDE, 2022). The study ended with 70 students divided into two groups of 35. This was due to attrition, truancy, change of placement, and parental consent.

The literacy coach/researcher and two of the K-3 interventionists were trained to implement Story Champs (Language Dynamics Group, 2019; Spencer & Peterson, 2018) and served students in this intervention. Story Champs is a scripted, evidence-based language intervention program for in-person and tele practice intervention (see Appendix E for examples). This intervention program is designed for use in cycles of six sessions, focusing on various aspects of language development. In kindergarten, cycles focus on enhanced story structure, language complexity, explicit vocabulary instruction, understanding words in context, story writing, and retelling information. In first grade, the cycles begin with a combination of enhanced story structure and language complexity, then move to understanding words in context,

information retelling, and writing both informational and fictional stories (Language Dynamics Group, 2019).

Notification letters and intervention plans have been included in the Literacy Assessment Portfolios (LAPs) as required by the State Department of Education under the Read to Succeed Act (SCDE, 2023). The interventionist or classroom teacher maintain the Literacy Assessment Portfolios (LAPs), depending on who serves as the interventionist for the student. Any data reported outside the immediate school group entitled to access the information used generic terms to protect student privacy and identity. All other confidential documentation will be maintained in a locked file cabinet in the researcher's room for five years.

Data Analysis

The IBM Statistical Package for Social Sciences (SPSS) was used to analyze the data using two separate, one-way analyses of covariance (ANCOVA). One ANCOVA examined the scores of receptive vocabulary on the Peabody PPVT-5 (Dunn, 2019), and the other ANCOVA examined the scores of expressive vocabulary as measured by the EVT-3 (Williams, 2019). Using two one-way ANCOVAs was appropriate because it allowed control of the pretests on each measure, which could have impacted the results of the analyses. In addition, Gall et al. (2007) state that the ANCOVA allows for increased sensitivity and assists in eliminating unwanted variance. The ANCOVA analysis evaluates the effects of the independent variable on the dependent variable and controls for the effects related to any covariates (Gall et al., 2007). According to Gall et al. (2007), the ANCOVA is a procedure that helps determine whether a statistically significant difference exists between the standard scores of two or more groups with one or more dependent variables while controlling for group differences on extraneous variables.

The ANCOVA was used to compare the posttest scores of the treatment and control groups on both the PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019) while controlling for pretest scores on both measures. In this case, the covariates were the pretests on the PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019). The ANCOVA was used to determine if the independent variable, participation in Story Champs Language Intervention (Language Dynamics Group, 2019; Spencer & Peterson, 2018), affected each dependent variable, in this case, scores on the posttest of both the PPVT-5 (Dunn, 2019) and EVT-3 (Williams, 2019). Therefore, using two separate ANCOVA was appropriate to evaluate the hypotheses (Gall et al., 2007). In addition, descriptive statistics, including the mean and standard deviations, were examined to identify patterns within the data. Data was visually screened to check for any missing data and inaccuracies.

According to Laerd Statistics (2017), ten assumptions should be considered when choosing to use a one-way ANCOVA for data analysis. The first four assumptions relate to the choice of study design and measurements, and the last six assumptions relate to how the data fit the one-way ANCOVA model. The assumption of no significant outliers was determined using a box and whisker plot to see if there were any extreme outliers (Laerd Statistics, 2017).

The first assumption considered was that one dependent variable was measured at the continuous level (Laerd Statistics, 2017). In this study, the first one-way ANCOVA had one dependent variable, the posttest results on the PPVT-5, measured at the continuous level (Dunn, 2019). The second one-way ANCOVA had one dependent variable, the posttest on the EVT-3, which was also measured at the continuous level (Williams, 2019).

The second assumption was that one independent variable consisted of at least two independent categorical groups (Gall et al., 2007). In this study, participation in the intervention

group that received instruction using Story Champs language intervention (Language Dynamics Group, 2019; Spencer & Peterson, 2018) or participation in the control group served as the independent variable in both one-way ANCOVAs (Gall et al., 2007). Since the data was analyzed in SPSS, the independent variable was measured at the nominal level, with one (1) representing participation in the intervention and zero (0) representing members of the control group.

The third assumption was that one covariate was measured at the continuous level (Gall et al., 2007). The first covariate in this study was the pretest scores on the PPVT-5 (Dunn, 2019), which assessed receptive vocabulary. This covariate was controlled for with the first one-way ANCOVA. Pretest scores on the EVT-3 (Williams, 2019) assessed expressive vocabulary. These scores were controlled for in the second one-way ANCOVA (Gall et al., 2007).

The fourth assumption related to the independence of observations, meaning there was no relationship between groups (Gall et al., 2007). This study had no overlap of students in the control or intervention groups, meaning that this assumption was met (Laerd Statistics, 2017). Since the first four assumptions were met, the one-way ANCOVA was an appropriate statistical analysis for this study (Laerd Statistics, 2017).

Assumptions 5 through 10 related to how data aligned with the one-way ANCOVA and were tested to ensure a good fit (Laerd Statistics, 2017). The fifth assumption was that the dependent variable and covariate were linearly related at each level. This assumption was tested using a series of scatter plots between the pretest-posttest variable for each dependent variable group, in this case, posttest scores on the PPVT-5 (Dunn, 2019) and the EVT-3, Williams, 2019). The assumption of linearity used a series of scatter plots between the pretest-posttest variable for each group. Failure to consider violations of the linear assumption could have led to incorrect

interpretation of the data. Assuming linearity between the pretest and posttest variables for the control and experimental groups allowed for a direct comparison of the groups. If there had been a linear relationship between the two groups, it could have been viewed as a straight line, making it easier to interpret differences between the two groups.

The sixth assumption related to homogeneity of regression slopes, which checked to ensure no interaction between the independent variable and the covariate pretest (Laerd Statistics, 2017). This test should show the same slopes for each variable. The regression lines from assumption five should be parallel, but homogeneity of regression of slopes provides statistical data to determine if there is a statistically significant interaction between the covariate, in this case the pretest, and the independent variable, in this case group assignment (Laerd Statistics, 2017).

The seventh assumption was that the dependent variable should have been normally distributed across each independent variable group (Laerd Statistics, 2017). The assumption of normality test used was Shapiro-Wilk, which was used to check for differences between the values of the dependent variable and the predicted values based on both the independent variable and the covariate (Gall et al., 2007; Warner, 2021). The Shapiro-Wilk test for normality is often used to assess normality for each variable when sample sizes are small ($n < 50$; Gall et al., 2007). According to Laerd Statistics (2017), data is normally distributed or met if the significance level is $p < .05$.

The eighth assumption is that there was homoscedasticity, meaning that variance in the scores of each value of the dependent variable was equivalent at all value levels related to the independent variable (Laerd Statistics, 2017). The assumption of homoscedasticity was measured in two ways. First, the homoscedasticity of error variance in the experimental and control groups

was similar. Second, the error variances between the groups were equal and relate to assumption nine, which states that there was homogeneity of variances for all groups of the independent variable (Laerd Statistics, 2017).

The ninth assumption, homogeneity of variance, was assessed using Levene's test of equality of variances (Laerd Statistics, 2017). Levene's test is often used to examine the equality of variance between two or more groups and can be used to check the assumption of homogeneity of variances (Laerd Statistics, 2017). If the assumption is violated, it may lead to incorrect interpretation of the data. Levene's test is sensitive to outliers, so it was important to check for outliers before performing the test (Warner, 2021).

The tenth assumption was that there were no significant outliers in the independent variable groups regarding the dependent variable (Laerd Statistics, 2017). Since two one-way ANCOVAs were conducted using the same participants, for both the PPVT-5 (Dunn, 2019) and the EVT-3 (Williams, 2019), a post hoc test, a Bonferroni correction, was needed to guard against Type I error (Gall et al., 2007; Warner, 2021). A Type 1 error occurs when the null hypothesis is rejected when it is true (Gall et al., 2007; Warner, 2021).

Before reporting the inferential data, descriptive statistics, including the mean and standard deviation for each group, were reported for each ANCOVA (See Table 1 for descriptive statistics; Gall et al., 2007; Warner, 2021). Partial eta squared was used to report the effect size for each ANCOVA. Eta squared is a common measure of effect size in ANCOVA, as it provides a standard way of quantifying the proportion of variability in the dependent variable that could be attributed to the independent variable after the covariate effects are controlled. The effect size for eta squared ($\eta 2$) was evaluated as $\eta 2$ of .01 as a small effect size, $\eta 2$ of .06 as a medium effect size, and $\eta 2$ of .14 or higher as a large effect size (Laerd Statistics, 2017). After the

assumption tests were run, the researcher analyzed each ANCOVA and reported the results along with the number *(N*), number per cell (*n*), degrees of freedom (*df*), observed *F* values (*F*), significance level (*p*), and power. The significance alpha level is a = .05 at a 95% confidence level (Gall et al., 2007; Warner, 2021)

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CHAPTER FOUR: FINDINGS

Overview

Chapter Four begins with an overview of the two research questions examined in this study. The null hypotheses are then stated. Descriptive statistics for each one-way ANCOVA are provided, followed by box and whisker plots representing the data. Tests of normality results are provided in tables, and figures of scatterplots for both ANCOVAs are also included. The results of the null hypotheses testing are also discussed. The chapter concludes with assumption testing results followed by tables of pairwise comparisons between the control and intervention groups.

Research Questions

RQ1: Is there a statistically significant difference in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest standard scores?

RQ2: Is there a statistically significant difference in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program and those who do not when controlling for pretest standard scores?

Null Hypotheses

The null hypotheses for this study are as follows:

$H_0$1: There is no statistically significant difference in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program, as measured by the Peabody Picture Vocabulary Test - 5th edition when controlling for pretest scores.

$H_0$2: There is no statistically significant difference in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs

language intervention program, as measured by the Expressive Vocabulary Test - 3rd edition when controlling for pretest scores.

Descriptive Statistics

Descriptive statistics were obtained on the covariate pretest on the PPVT-5 (Dunn, 2019), and the EVT-3 (Williams, 2019) participation in Story Champs language intervention (independent variable) and posttest on both the PPVT-5 and the EVT-3 (dependent variable). Tables 1 through 4 provide descriptive statistics.

Table 1

Descriptive Statistics: Covariate: PPVT-5 Pretest

Group	*n*	*M*	*SD*
0 - Control	35	72.69	6.803
1 – Intervention	35	71.97	7.406

Table 2

Descriptive Statistics Covariate: EVT-3 Pretest

Group	*n*	*M*	*SD*
0 - Control	35	78.91	6.648
1 – Intervention	35	71.97	5.440

Table 3

Descriptive Statistics PPVT-5 Posttest

Group	*n*	*M*	*SD*
0 - Control	35	75.09	7.394
1 – Intervention	35	86.26	8.455

Table 4

Descriptive Statistics EVT-3 Posttest

Group	*n*	*M*	*SD*
0 - Control	35	82.71	8.69
1 – Intervention	35	97.34	12.623

Unadjusted means are presented, unless otherwise stated. Receptive vocabulary posttest scores as measured by the PPVT-5 were greater for the intervention group (M = 86.26, SD = 8.46) when compared to the control group (M = 75.01, SD = 7.39). Expressive vocabulary posttest scores as measured by the EVT-3 were greater for the intervention group (M = 97.34, SD = 11.75) when compared to the control group (M = 84.71, SD = 8.66).

Data Screening

Data screening was conducted on each group's covariate and dependent variables. The researcher sorted the data on each variable and scanned for inconsistencies. No data errors or inconsistencies were identified. Box and whisker plots were used to detect extreme outliers on

each dependent variable. One outlier (data point 22) was identified for the dependent variable posttest on the PPVT-5. Several outliers (data points 1, 3, 22, 54, 56, 59, and 65) were identified on the EVT-3 pretest and posttest (data points 1, 6, 12, 20, 21, 33, 57, and 65). The researcher converted the data point to a *z*-score, and all fell within +3 and –3 standard deviations of the sample mean (Warner, 2021). Thus, the data points were not considered extreme scores and were maintained in the data set. See Figures 4 through 7 for box and whisker plots.

Figure 4

Box and Whisker Plots Pretest PPVT-5 (covariate)

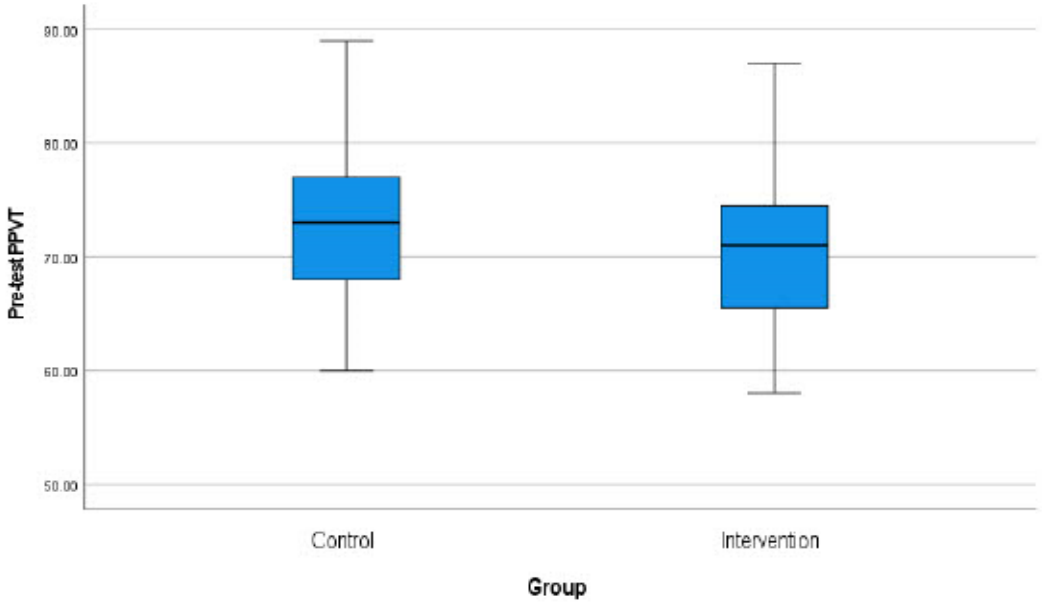


Figure 5

Box and Whisker Plots Posttest PPVT-5 (dependent)

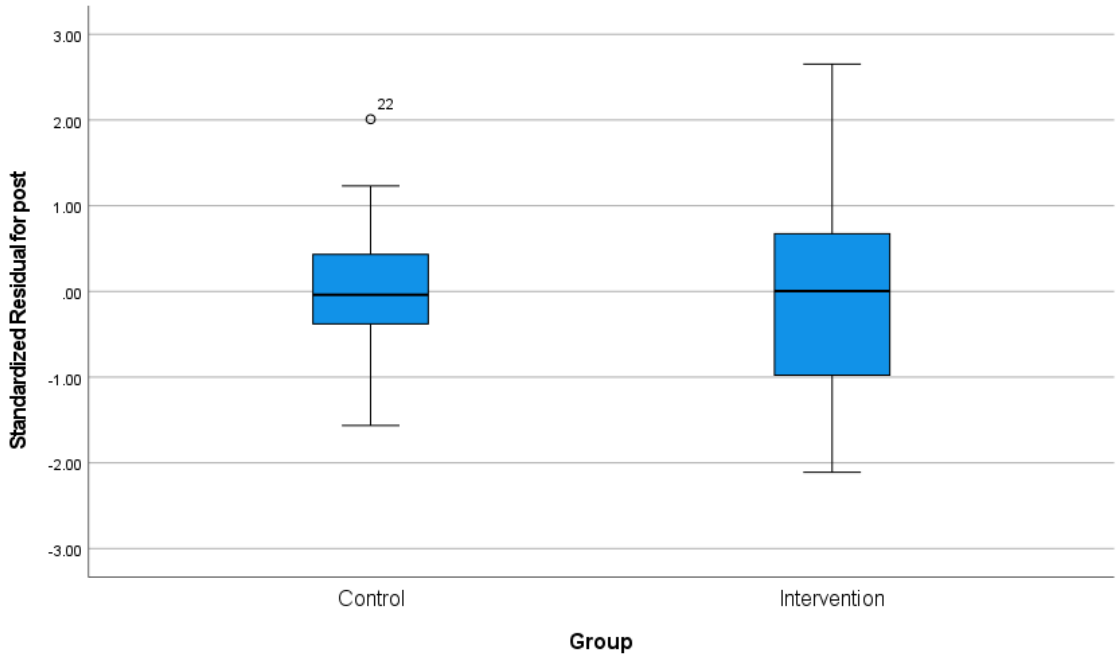


Figure 6

Box and Whisker Plots for EVT-3 Pretest (covariate)

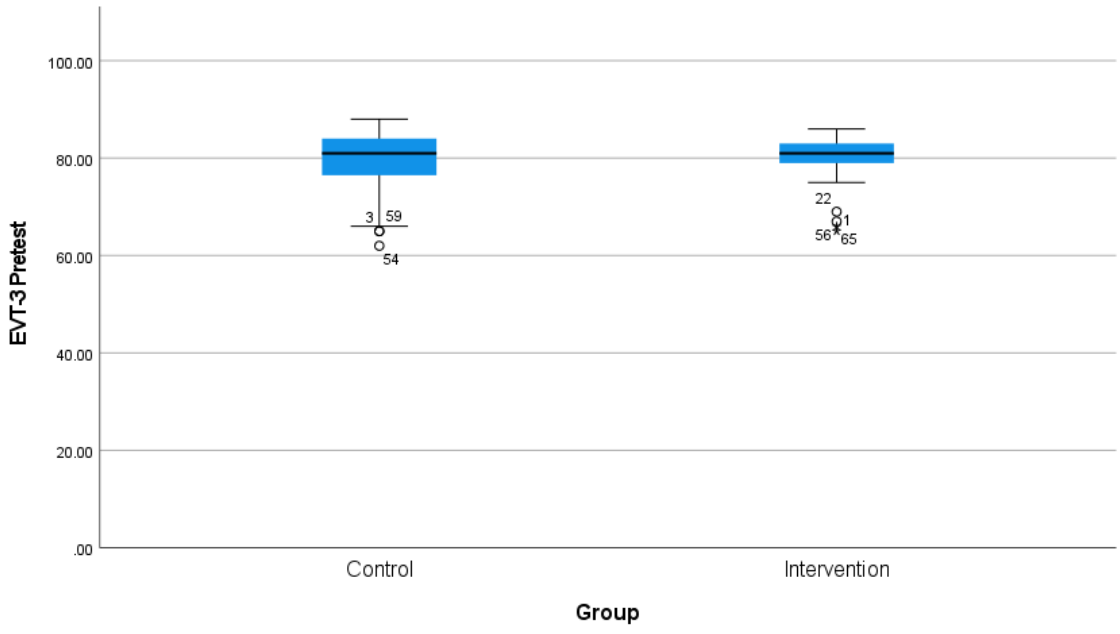
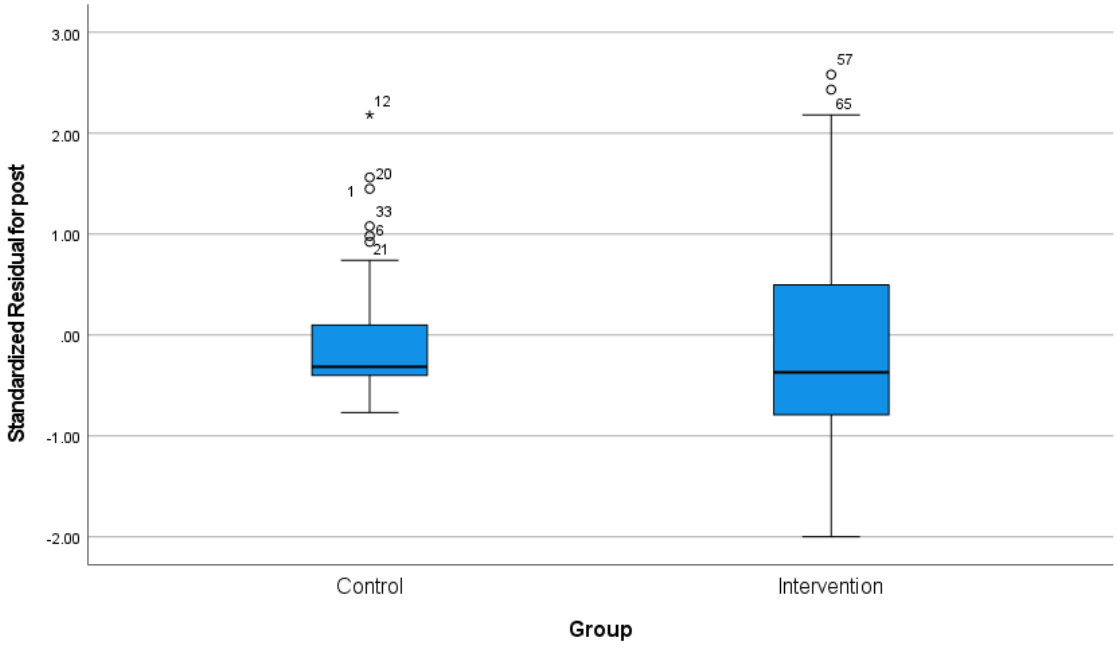


Figure 7

Box and Whisker Plots for EVT-3 Posttest (dependent)



Assumptions

An ANCOVA was used to test both null hypotheses. The ANCOVA required that the assumptions of normality, assumption of linearity and bivariate normal distribution, assumption of homogeneity of slopes, and the homogeneity of variance were met. See Tables 5 and 6 for tests of between-subject effects.

Table 5

Tests of Between-Subjects Effects

Dependent Variable: Posttest PPVT-5

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	3,951.160[a]	3	1,317.0	34.46	< .001
Intercept	384.636	1	384.6	10.07	.002
group	166.968	1	166.9	4.37	.040
pre	1,704.378	1	1,704.0	44.60	< .001
group * pre	65.310	1	65.3	1.71	.196
Error	2,522.282	66	38.2		
Total	462,025.000	70			
Corrected Total	6,473.443	69			

a. *R* squared = .610 (Adjusted *R* Squared = .593)

Examination of the results of the tests between-subjects effects for the PPVT-5 indicates there was homogeneity of regression of slopes as the interaction term was not statistically significant, $F(1,66) = 1.709$, $p = .196$.

Table 6

Tests of Between-Subjects Effects

Dependent Variable: Posttest EVT-3

Source	Type III Sum of Squares	*df*	Mean Square	*F*	Sig.
Corrected Model	6,151.340[a]	2	3,075.7	42.55	< .001
Intercept	152.763	1	152.8	2.11	.151
group * pre	6,151.340	2	3,075.7	42.55	< .001
Error	4,842.602	67	72.3		
Total	578,354.000	70			
Corrected Total	10,993.943	69			

a. *R* Squared = .560 (Adjusted *R* Squared = .546)

Examination of the results of the tests between-subjects effects for the EVT-3 indicates there was homogeneity of regression slopes as the interaction term was not statistically significant, $F(2, 67) = 42.554$, $p < .001$.

The Shapiro-Wilk test was performed to assess normality. Standardized residuals for the PPVT-5 were normally distributed as assessed by Shapiro-Wilk's test ($p > .05$), as shown in Table 7. Standardized residuals for the EVT-3 were normally distributed as assessed by Shapiro-Wilk's test ($p > .05$), as shown in Tables 8.

Table 7

Test of Normality PPVT-5

		Shapiro-Wilk		
	Groups	Statistic	*df*	Sig.
Posttest	0 – Control	.980	35	.768
	1 - Intervention	.971	35	.472

Table 8

Test of Normality EVT-3

		Shapiro-Wilk		
	Groups	Statistic	*df*	Sig.
Posttest	0 – Control	.789	35	< .001
	1 - Intervention	.925	35	.019

The assumption of linearity and bivariate normal distribution were tested using scatter plots for each group. Linearity was met and bivariate normal distributions were tenable as the shapes of the distributions were not extreme. Scatter plots for each group are shown in Figure 8 and Figure 9**.** The assumption of homogeneity of slopes for the PPVT-5 was tested and no interaction was found where $p > .05$. The assumption of homogeneity of slopes for the EVT-3 was tested and no interaction was found where $p > .05$. Therefore, the assumption of homogeneity of slope was met.

Figure 8

Scatter Plot for PPVT-5

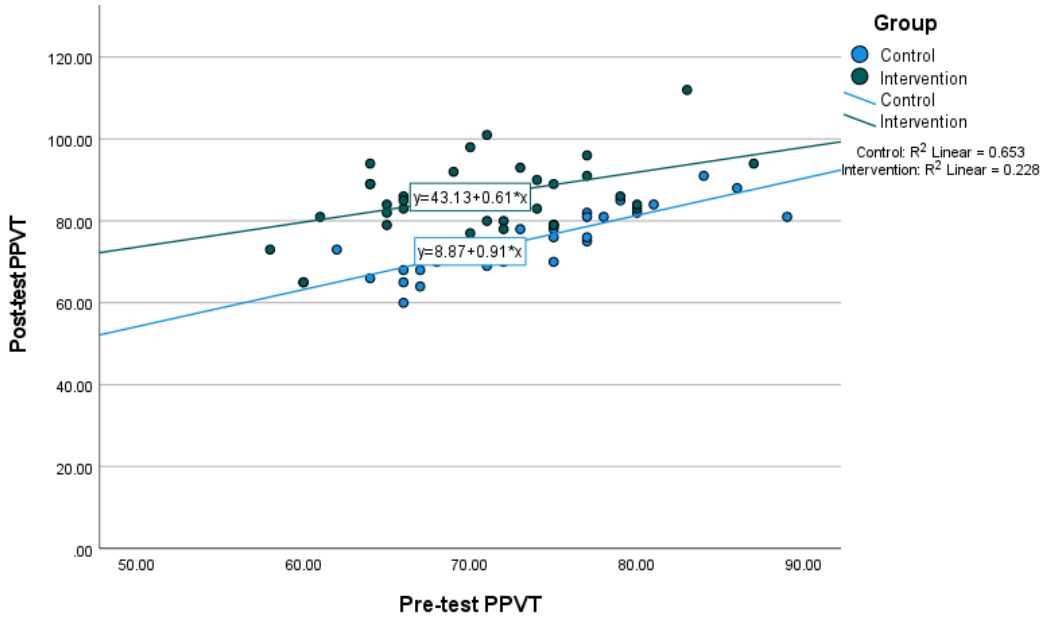


Figure 9

Scatter Plot for EVT-3

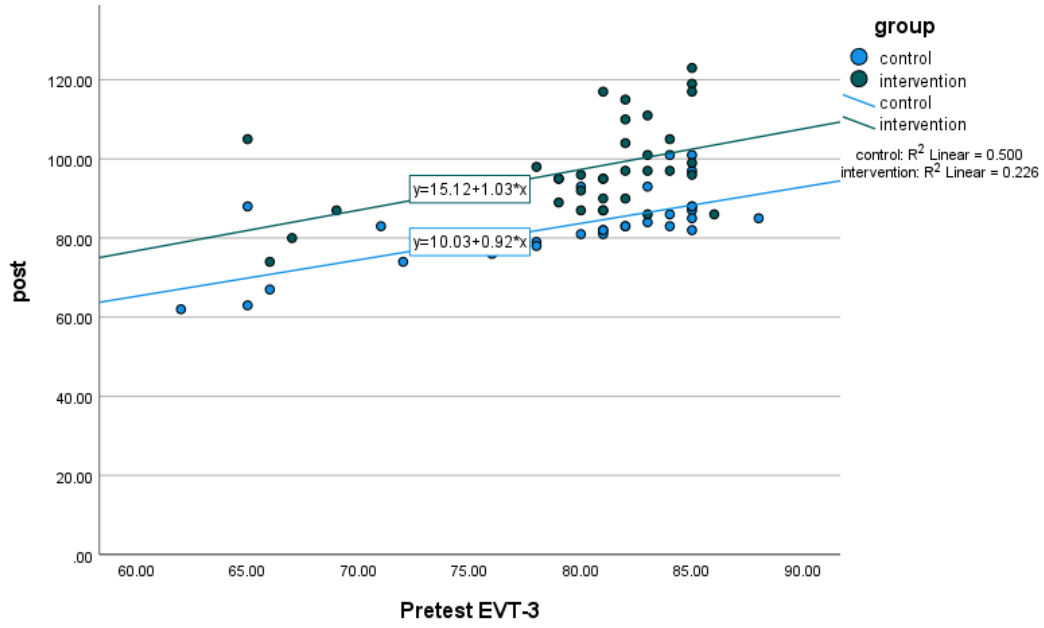


Table 9

Levene's Test of Equality of Error Variances

Dependent Variable: PPVT-5 Posttest

F	*df1*	*df2*	*Sig.*
7.242	1	68	.009

Table 10

Levene's Test of Equality of Error Variances

Dependent Variable: EVT-3 Posttest

F	*df1*	*df2*	*Sig.*
7.900	1	68	.006

The assumption of homogeneity of variance for the PPVT-5 was violated using Levene's test where $p = .009$. The assumption of homogeneity of variances was violated for the EVT-3, as assessed by Levene's test for equality variances ($p = .006$) as well. However, ANCOVA is robust to violations of the homogeneity of variance when the sizes of the groups are equal or nearly equal (Warner, 2021). Since the group sizes were 35 and 35, the decision was made to continue with the analysis.

Figure 10

Homoscedasticity of Error Variance PPVT-5 Intervention Group

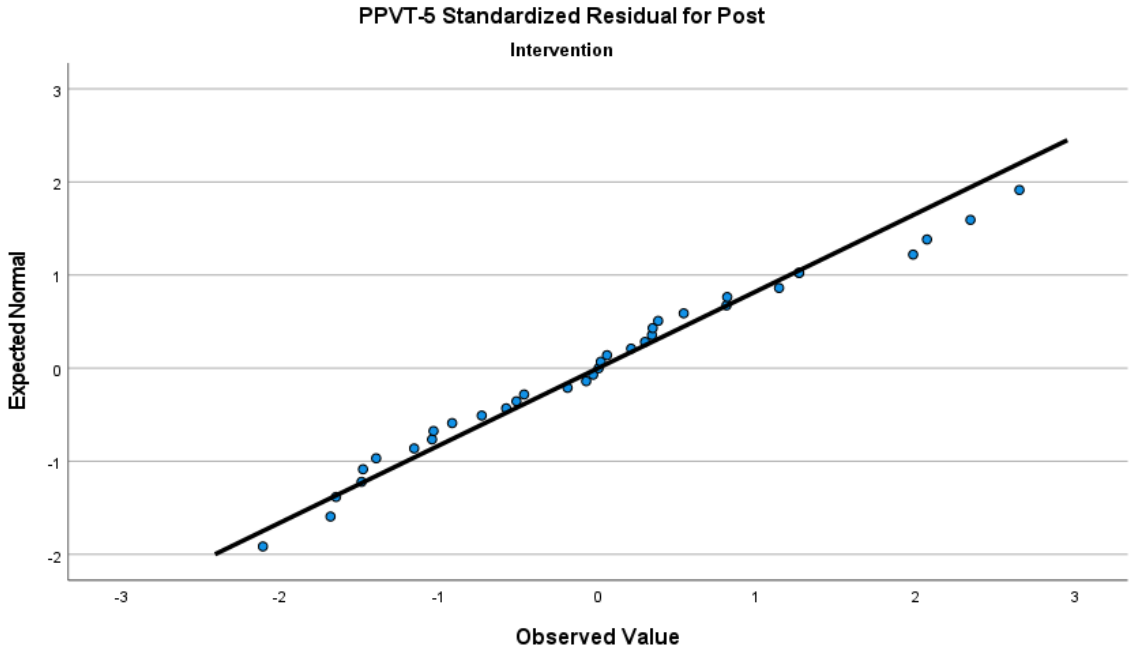


Figure 11

Homoscedasticity of Error Variance PPVT-5 Control Group

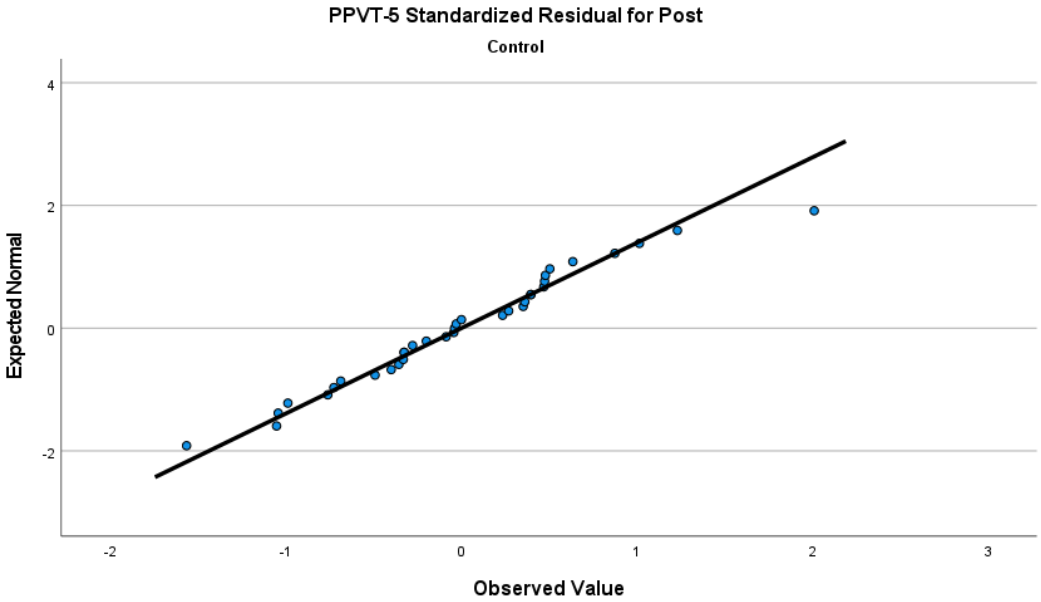


Figure 12

Homoscedasticity of Error Variance EVT-3

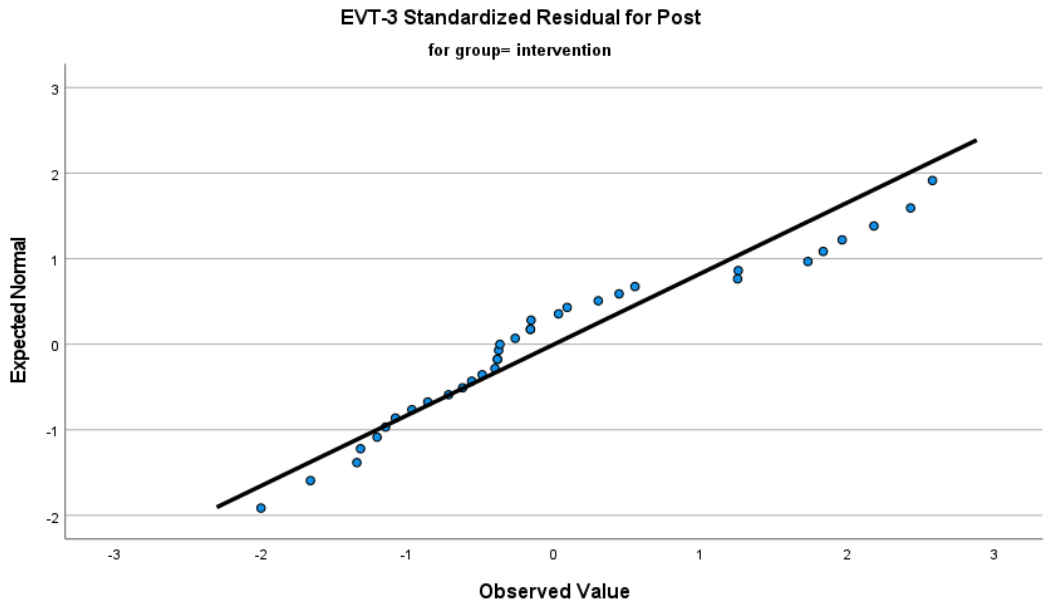
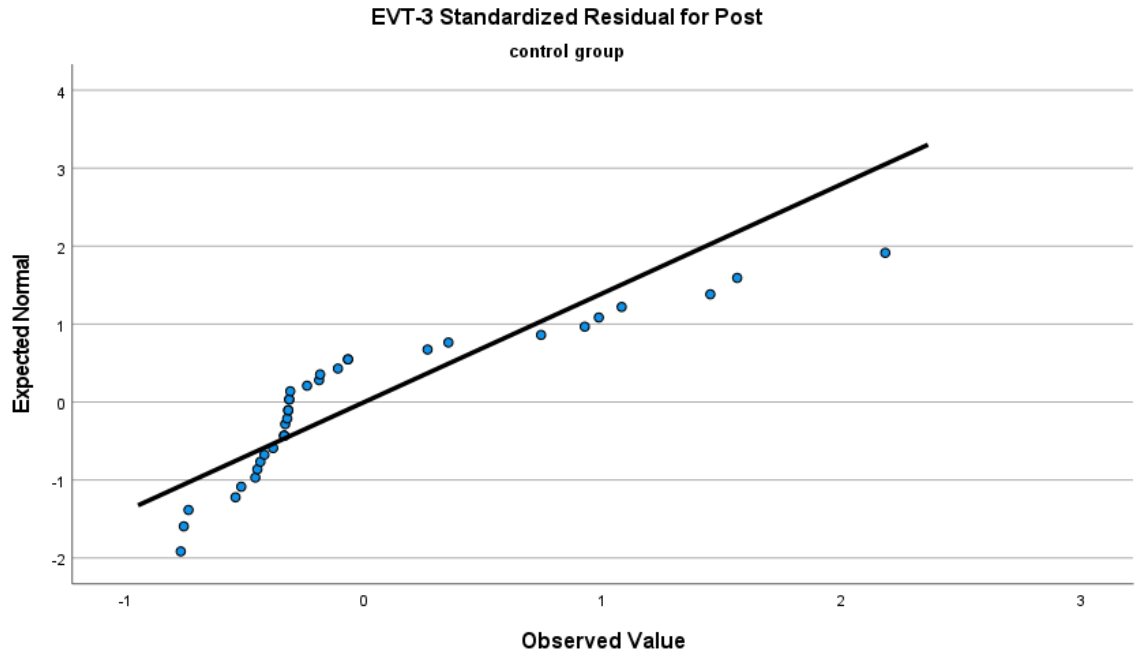


Figure 13

Homoscedasticity of Error Variance EVT-3



There was homoscedasticity for both the intervention and control group on the EVT-3 (Williams, 2019) as assessed by visual inspection of the standardized residuals plotted against the predicted values (Laerd, 2017).

Results

Two one-way ANCOVAs were used to test the null hypothesis regarding the effect of Story Champs language intervention program on kindergarten and first-grade students receptive and expressive vocabulary scores, while controlling for the covariant pretest on both the PPVT-5 and the EVT-3. The null hypothesis for the PPVT-5 was rejected at 95% confidence level where $F(1, 67) = 73.36$, $p < .001$, $np^2 = .523$. The null hypothesis for the EVT-3 was rejected at 95% confidence level where $F(1, 67) = 43.62$, $p < .001$, $np^2 = .394$. Because the null was rejected, post hoc analysis was conducted using Fishers LSD. A significant difference was found between the intervention group ($M_{adj} = 87.13$, $SE = 1.06$) and the control group ($M_{adj} = 74.21$, $SE = 1.06$) on the PPVT-5 posttest. Moreover, a significant difference was found between the intervention group ($M_{adj} = 96.82$, $SE = 1.45$) and the control group ($M_{adj} = 83.24$. $SE = 1.45$) scores on the EVT-3 posttest. See Tables 11 and 12 for multiple comparisons of groups.

Table 11

Multiple Comparisons of Groups

Pairwise Comparisons

Dependent Variable: Posttest PPVT-5

(I) Group	(J) Group	Mean Difference (I–J)	*SE*	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Control	Intervention	–12.924*	1.509	<.001	–15.935	–9.912
Intervention	Control	12.924*	1.509	<.001	9.912	15.935

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

Table 12

Pairwise Comparisons

Dependent Variable: Posttest EVT-3

(I) Group	(J) Group	Mean Difference (I–J)	*SE*	Sig.[b]	95% Confidence Interval for Difference[b]	
					Lower Bound	Upper Bound
Control	Intervention	–13.582	2.056	<.001	–17.687	–9.477
Intervention	Control	13.582	2.056	<.001	9.477	17.687

Based on estimated marginal means

*. The mean difference is significant at the .05 level.

b. Adjustment for multiple comparisons: Bonferroni.

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CHAPTER FIVE: CONCLUSIONS

Overview

This chapter discusses the results of this quantitative, quasi-experimental, pretest-posttest, non-equivalent control group research. The purpose of the study was to examine the effect of language-based interventions on accelerating the receptive and expressive vocabulary development of kindergarten and first-grade students whose standard scores on receptive and expressive vocabulary were 85 or below. The implications and limitations of this study are discussed after the results. The chapter concludes with recommendations for future research.

Discussion

The purpose of this quantitative, quasi-experimental, pretest-posttest, non-equivalent control group study was to determine if the use of an evidence-based language intervention program (independent variable) could positively impact the receptive and expressive vocabulary scores (dependent variables) of students in kindergarten and first grade, whose standard scores were 85 or below on both measures (Dunn, 2019; Williams, 2019). The first null hypothesis was that no statistically significant difference exists in receptive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program (Spencer & Peterson, 2018), as measured by the PPVT-5 (Dunn, 2019) when controlling for pretest scores. The second null hypothesis was that no statistically significant difference exists in expressive vocabulary standard scores among at-risk kindergarten and first-grade students who participate in Story Champs language intervention program (Spencer & Peterson, 2018), as measured by the EVT-3 (Williams, 2019) when controlling for pretest scores.

The study results indicated a statistically significant difference between the receptive and expressive vocabulary scores of kindergarten and first-grade students who participated in Story Champs (Spencer & Peterson, 2018) compared to the control group. Thus, participating in the evidence-based language intervention program Story Champs (Spencer & Peterson, 2018) positively impacted the vocabulary development of students who entered kindergarten and first grade with receptive and expressive vocabulary scores of one or more standard deviations below age-level expectations compared to the control group. Therefore, the null hypotheses were rejected. The findings of this study underscored the positive impact of implementing an evidence-based language intervention program on receptive and expressive vocabulary development among kindergarten and first-grade students, highlighting the benefit of enhancing early vocabulary skills crucial for academic success and lifelong learning.

This study extends previous research into the vocabulary proficiency of early childhood students, with a particular focus on students who exhibit receptive and expressive vocabulary delays but do not qualify for assistance or services as a student whose primary language is not English or have not been identified as having a language-based disability (Ascetta, 2019; Spear-Swerling, 2018; Webster, 2021). The findings of this study support previous research by Coyne et al. (2022), Dolean et al. (2019), Janssen et al. (2019), Snowling and Hulme (2021), and Yeung et al. (2020), which suggest that vocabulary differences among students are evident upon school entry and that typical early childhood settings do not assist these children in catching up to their peers with more age typical vocabulary.

While the results of this study are consistent with research conducted by Coyne et al. (2022), Kelley et al. (2020), and Gallagher et al. (2019), indicating that vocabulary intervention in kindergarten is effective in improving language skills, research conducted by Vatalaro et al.

(2018) and Wasik and Hindman (2020) on language intervention for preschool students yielded mixed results using technology-based interventions. While scaffolding applications showed positive results, open-ended and narrative applications were less effective. The concept of scaffolding (Bandura, 1977) and vocabulary teaching through social interactions are consistent with the sociocultural theory of development (Vygotsky, 1930–1934/1978), which postulates that student learning and language advance at accelerated rates when provided with models, assistance, and feedback.

The study results underscore the importance of evidence-based interventions intended to improve language and vocabulary development in early childhood for students at risk of reading difficulties. However, the findings are inconclusive concerning whether these improvements lead to better reading comprehension. While various interventions, including technology-based interventions, have yielded promising results, direct instruction through a program such as Story Champs (Spencer & Peterson, 2018) has significantly impacted student achievement in many, but not all, cases. Language intervention studies have indicated accelerated growth when combined with professional development for implementation and consistent instruction (Coyne et al., 2022; Gillon et al., 2023; Kelley et al., 2020). Story Champs (Spencer & Peterson, 2018) is consistent with these findings as the program provides scripted lessons. This study used co-planning and observations to ensure the fidelity and consistency of the program's implementation. However, even scripted programs cannot dictate every interaction between teachers and students.

The Impact of Story Champs on Receptive Vocabulary

The present study highlights the statistically significant difference between the intervention and control groups, emphasizing the importance of intervention in aiding students

with receptive vocabulary scores below age-level expectations in making progress toward age-typical vocabulary skills. It also indicates that typical classroom instruction does not significantly impact vocabulary development for these students (Dolean et al., 2019; Janssen et al., 2019). Moreover, when compared to the control group, the intervention group posttest scores on the PPVT-5 (Dunn, 2019), showed a significantly higher adjusted mean. The intervention group's posttest score on the PPVT-5 was 87.13, compared to the adjusted mean of the control group at 74.21, indicating a notable improvement in the intervention group's receptive vocabulary scores. These findings provide compelling evidence that participation in Story Champs (Spencer & Peterson, 2018) improved students' receptive vocabulary in the intervention group.

The study findings also reveal that direct instruction in receptive vocabulary yields positive results. The effectiveness of direct instruction is consistent with the research of Archer and Hughes (2011), Kilpatrick (2015), and Spear-Swerling (2018), indicating that identifying areas of need related to learning and intervening directly with feedback produces accelerated growth. In addition, Fisher et al. (2016) indicated that directly instructing students in small increments that build over time positively impacts student achievement. Story Champs provides levels of text for instruction and activities aligned with student age and ability levels, with students listening to the story and using icons to assist in the retelling. In addition, the scripted lessons build opportunities to check for student understanding and provide feedback and options for reteaching as needed (Spencer & Peterson, 2018).

These findings are significant when considering the impact of receptive vocabulary on a student's overall cognitive development (Merz et al., 2020; Vygotsky, 1930-1934/2012). Not only does receptive vocabulary impact reading comprehension (Scarborough, 2001), critical thinking (Hill, 2019; Jones, 2008), and overall academic achievement (Jones et al., 2019), but

also plays a fundamental role in social communication (Bandura, 1977; Vygotsky, 1930-1934/1978/2012). Recent research by Coyne et al. (2022) also found that improvement in vocabulary development in kindergarten was maintained through second grade, indicating that early intervention in vocabulary can have a long-term, positive effect on student achievement. While studies conducted in preschool settings by Thomas et al. (2020) and Vatalaro et al., (2018) found mixed results, studies by Wang (2021), and Yeung et al. (2020), found positive results when direct vocabulary instruction was provided to students. Findings on the impact of intervention on receptive vocabulary development are important as words must be part of an individual's receptive vocabulary before becoming part of the expressive vocabulary (Dolean et al., 2019).

The Impact of Story Champs on Expressive Vocabulary

The findings related to expressive vocabulary scores on the EVT-3 indicate a statistically significant difference between the intervention and control groups. The study results are significant for the field of education, as they highlight the importance of intervening early to improve the expressive language scores of students who enter kindergarten or first grade below age-level expectations. The findings indicate that students who received instruction in expressive language made accelerated progress, which was superior to the progress achieved through typical classroom instruction. These results support previous research by Dolean et al. (2019) and Janssen et al. (2019), as evidenced by the statistically significant difference between the adjusted means scores of students who participated in Story Champs intervention at 96.82 and the adjusted means of the control group at 83.24.

The results of this study suggest that teaching expressive vocabulary directly leads to positive outcomes, aligning with research by Archer and Hughes (2011), Kilpatrick (2015), and

Spear-Swerling (2018). Student progress can be accelerated by identifying the areas where students struggle in reading development and intervening with targeted feedback, as aligned with the findings of Fisher et al. (2016), which demonstrated that direct and incremental learning, combined with targeted feedback, yielded significant improvement in academic success. With Story Champs, students are provided different levels of text for instruction, asked to retell stories using key details and vocabulary, and guided by their teacher through feedback as needed, all of which align with these principles.

The crucial role of expressive vocabulary in children's development underscores the importance of addressing this issue in education. Expressive vocabulary impacts literacy development, critical thinking skills (Hill, 2019; Jones, 2008), social interactions (Vygotsky, 1930–1934/1978), communication skills (Fisher & Frey, 2018), and academic success (Moats, 2003; Scarborough, 2001). Expressive language impacts reading achievement and plays a fundamental role in social communication and written expression (Bandura, 1977; Vygotsky, 1930–1934/2012). Research by Nation (2019) and Scarborough (2001) found that language comprehension was critical to continued academic success. Therefore, effective interventions, such as Story Champs, are essential to support students' expressive vocabulary development.

Implications

The issue of ensuring academic success for all students is a pressing concern, as NAEP (2022) scores have remained virtually unchanged over the past 40 years. Empirical evidence has revealed that early identification and intervention in reading difficulties during kindergarten and first grade is paramount (Brown-Chidsey & Steege, 2010; Buffum et al., 2011; Eklund et al., 2018; Gillon et al., 2023). However, improvement is needed concerning the current methods of identifying at-risk students regarding language proficiency and vocabulary knowledge (Brown-

Chidsey & Steege, 2010; Dehaene, 2009; Gillon et al., 2023). Current universal screening measures designed to identify students at risk for reading difficulties focus exclusively on phonemic awareness and rapid automatized naming but overlook the significance of language comprehension (Kilgus et al., 2019; Kilpatrick, 2015; Lundberg, 2009). While phonemic awareness and rapid naming of letters and sounds are the best predictors of the development of word recognition (Kilpatrick, 2015; Moats, 2003; Shaywitz & Shaywitz, 2020; Spear-Swerling, 2022), language comprehension impacts orthographic mapping important for word recognition as a crucial predictor of reading achievement once decoding skills are developed (Coyne et al., 2022; Dolean et al., 2019; Janssen et al., 2019; Pinto et al., 2016; Scarborough, 2001; Seidenberg, 2017; Snowling & Hulme, 2021; Tamis-LeMonda et al., 2019). However, language screening only occurs for documented concerns about a child's language ability. Most screenings are lengthy and require special training to administer, making it difficult for classroom teachers to add this assessment to classroom practice (Moats, 2003; Scarborough, 2001).

Nonetheless, receptive and expressive vocabulary improvements do not automatically mean children will become proficient readers. Many factors affect student achievement, and language comprehension and decoding are equally important, as shown in Figure 3 (Scarborough, 2001). Improvement in vocabulary development positively impacting language comprehension is consistent with Piaget's (1951) theory that the more categories (i.e., schema) a person has, the easier it is to integrate new learning into existing categories.

The concept of vocabulary knowledge improving learning outcomes is consistent with recent research indicating that oral language is critical to student learning and impacts overall cognitive development (Merz et al., 2020; Snowling & Hulme, 2021). While no program can completely ameliorate differences in the environment outside of school, and results cannot

be guaranteed across all populations, continued participation in a program aimed at increasing vocabulary and overall language development can likely positively impact continued growth in language comprehension, as found by Coyne et al. (2022). In addition, initial gains in early childhood may not indicate long-term effects or improvement in overall language proficiency or improved reading comprehension. Nevertheless, an examination of Scarborough's (2011) rope, as shown in Figure 3, indicates that vocabulary is a critical component in language comprehension and impacts overall achievement.

Early childhood educators must shift their focus from word recognition alone to word recognition and language development, of which vocabulary is a significant contributor, to ensure that all students succeed. Combined with prior research (Coyne et al., 2022; Janssen et al., 2019), this study underscores the importance of evidence-based, targeted interventions that enhance early childhood students' receptive and expressive vocabulary skills. Furthermore, this study emphasizes the need for language interventions to address background knowledge, syntax, and pragmatics as part of a comprehensive intervention program that can assist in closing the achievement gap for students and increase the likelihood of academic success (Jones et al., 2019; Levine et al., 2020; Pinto et al., 2016; Thomas et al., 2020). By revising universal screening protocols to include language and vocabulary assessments, students who need this critical skill could be identified, placed into language intervention programs, and tracked upon school entry to ensure success in both word recognition and language comprehension. However, the screening measures must be fast, efficient, and accurate.

The findings of this study emphasize the crucial role of early interventions in identifying and addressing language deficits in young children through evidence-based interventions implemented consistently with fidelity (Dolean et al., 2019; Merz et al., 2020; Snowling &

Hulme, 2021). Furthermore, providing professional development opportunities for early childhood teachers to understand the significance of language development can equip them with the necessary skills to help their students succeed in all areas of literacy development (Moats, 2003; Vatalaro et al., 2018; Wasik & Hindman, 2020).

This study's outcomes demonstrate that implementing the evidence-based language intervention program Story Champs (Spencer & Peterson, 2018) can positively impact the receptive and expressive vocabulary skills of students who enter kindergarten and first grade with receptive and expressive language scores below age-level expectations. These findings align with previous research that highlights the importance of early intervention in improving overall vocabulary and language skills (Coyne et al., 2022; Gallagher et al., 2019; Kelley et al., 2020). The results of this study also support the sociocultural development theory (Vygotsky, 1930–1934/1978), which underscores the role of social interaction in promoting language development.

The promising results found through this study have led to plans to include Story Champs as part of the core curriculum in kindergarten and first grade for the 2024–2025 school year. Teachers will use the program with their whole class and reinforce concepts in small groups based on data collected at the year's beginning, middle, and end. The data will include tasks like retelling stories and identifying key components of story elements and structure for fiction and non-fiction texts read aloud to students. The goal of using Story Champs with all students is to enhance language development in early childhood educational settings, which is an area that needs to be addressed. However, further research is necessary to determine the feasibility and long-term effectiveness of early language and vocabulary intervention for kindergarten and first-

grade students. As more states enact legislation to align instructional practices with the simple view of reading, intervening in language development will likely become a priority.

Limitations

This section discusses the limitations of the research design, procedures, setting, and participants. While the intervention yielded statistically significant improvement in students' receptive and expressive vocabulary skills, the findings must be interpreted in the context of the study. The limitations of this research include the overall design, the small sample size, instructional inconsistencies, preexisting control and intervention group differences, and the study's short duration. In addition, simply improving scores on receptive and expressive vocabulary tests is insufficient to ensure that students' reading comprehension improves or will continue to improve, as receptive and expressive vocabulary are not the only factors influencing reading comprehension.

The research examined whether participation in an evidence-based language intervention program could enhance students' receptive and expressive vocabulary proficiency using a quasi-experimental pretest-posttest design, where students were not randomly assigned (Gall et al., 2007). Thus, the lack of random assignment created the possibility that differences in the control and intervention groups accounted for the results and might have impacted them overall. However, quasi-experimental designs are frequently used in educational settings where random assignment is unfeasible (Gall et al., 2007). In addition, care was taken to ensure that the control and intervention groups were as similar as possible.

The study featured a small sample size. After accounting for attrition, absenteeism, and placement into special education settings during the study, the size for the control and intervention groups was 70 students, divided into two groups of 35. Though this number

exceeded the 33 per-group requirement for the ANCOVAs, the sample size was still small (Gall et al., 2007). The students were chosen from a convenience sample from one school; therefore, the results might only apply to similar populations (Gall et al., 2007). Instances occurred when the interventionists were absent or pulled to cover classrooms when substitute teachers were unavailable. Although the goal was to pull students four times weekly, it was not always achieved. While students were typically seen four times per week, some weeks averaged only once or twice. Scheduling constraints prevented sessions from being made up. Additionally, the school district adopted a year-round calendar for the 2023–2024 school year, including a 2-week break in October, causing a break in student instruction.

The literacy coach/researcher and two interventionists implemented the program Story Champs in small groups. All three instructors trained together and co-planned the lessons, which were scripted. Therefore, differences in instruction cannot be ruled out completely. To combat these limitations, the researcher observed the two interventionists' program implementation every 2 weeks during the study period. Furthermore, the ANCOVA was used to control for differences in the pretest scores of the groups.

A final limitation was the need for similar studies. While studies have been conducted with ELLs (Fisher & Frey, 2018; Mancilla-Martinez et al., 2020; Sanabria et al., 2022; Wang, 2021), preschool students (Jones et al., 2019; Kelley et al., 2020; Levine et al., 2020; Thomas et al., 2020; Wasik & Hindman, 2020), and students with identified language-based learning disabilities (Alt et al., 2019; Gallagher et al., 2019; Merz et al., 2020; Schworer et al., 2022), few studies have examined the impact of language intervention on students entering school without age or grade-appropriate vocabulary who were not previously identified as having a language disability (Coyne et al., 2022; Dolean et al., 2019; Janssen et al., 2019). The lack of prior studies

means that the current study cannot be compared with many others to determine if comparable results were found.

Recommendations for Future Research

- While this dissertation found positive results, more research is needed to validate them and determine their applicability to other populations.
- Previous research has primarily focused on specific groups, such as preschool students, English language learners, special education students, and students from low socioeconomic backgrounds; however, few studies have examined the impact of intervention on students in the general population regardless of subgroup status.
- Future research could expand and diversify the number of participants to ensure that the findings are representative of a larger student population while determining if language-based interventions could be successfully applied to other groups of students.
- This research was conducted in an elementary school where intervention team members and the researcher sometimes struggled to pull groups for instruction due to a shortage of substitutes. Future research in a setting with more consistent instruction (e.g., a tutoring program) could assist in determining if the impact on student achievement is even more significant.
- While the ANCOVAs were used to control for differences between the control and intervention groups, preexisting differences could not be completely ruled out. Therefore, future research could use a random assignment.
- Since prior studies identified professional development as paramount to successful intervention, future studies on teacher knowledge and understanding of age-appropriate language development and interventions could be investigated.

- Continuation of an evidence-based language intervention program over time could also assist in determining if improvement in expressive and receptive language would continue and if improvement over time would positively impact reading comprehension as students move from kindergarten and first grade to second grade and beyond.
- Lastly, future studies should examine the longitudinal effect of intervention on student achievement. Reassessing and tracking students' receptive and expressive vocabulary scores and overall literacy achievement through elementary school could determine if the results were maintained over time.

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APPENDIX A: Parental Consent Forms

Parental Consent

Title of the Project: A Quantitative Study on the Impact of Language Intervention on At-Risk Kindergarten and First-Grade Students

Principal Investigator: [redacted]

Invitation to be Part of a Research Study

Your child is invited to participate in a research study. To participate, he or she must be a kindergarten or 1st grade student [redacted]. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to allow your child to take part in this research project.

What is the study about and why are we doing it?

The purpose of the study is to determine the effect of participation in Story Champs language intervention program on kindergarten and first-grade students' language development.

What will participants be asked to do in this study?

If you agree to allow your child to be in this study, I will ask her/him to do the following:

1. Participate in either the experimental or control group. The experimental group will participate in Story Champs language intervention program and the control group will not participate.
2. Participants who are part of the experimental group will receive daily intervention using Story Champs either in the classroom or as part of a pull-out intervention program for 12 weeks.
3. Data will be collected at the beginning and end of the intervention to determine if the program had an impact on student achievement.

How could participants or others benefit from this study?

Direct Benefits] The direct benefits participants should expect to receive from taking part in this study are additional instruction to help students increase vocabulary development.

Benefits to society include gathering information about the effectiveness of this language intervention program on student achievement.

What risks might participants experience from being in this study?

Minimal Risk: The expected risks from participating in this study are minimal, which means they are equal to the risks your child would encounter in everyday life.

I am a mandatory reporter. During this study, if I receive information about child abuse, child neglect, elder abuse, or intent to harm self or others, I will be required to report it to the appropriate authorities.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher, your child's teacher, and the school's administration will have access to the records.
Data collected from your child may be used in future research studies and/or shared with other researchers. If data collected from your child is reused or shared, any information that could identify your child if applicable will be removed beforehand.

- Data will be stored on a password-locked computer and hard copies will be in a locked file cabinet. After 3 years all electronic files will be deleted and any hardcopy records will be shredded

How will participants be compensated for being part of the study?

Participants will not be compensated for participating in this study

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to allow your child to participate will not affect your or his/her current or future relations with [redacted] If you decide to allow your child to participate, she/he is free to withdraw at any time without affecting those relationships.

What should be done if a participant wishes to withdraw from the study?

If you choose to withdraw your child from the study or your child chooses to withdraw, please contact the researcher at the email address/phone number included in the next paragraph. Should you choose to withdraw her/him or should your child choose to withdraw, data collected from your child will be destroyed immediately and will not be included in this study.

Whom do you contact if you have questions or concerns about the study?

The researcher[s] conducting this study is [redacted]

Whom do you contact if you have questions about rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher[s], **you are encouraged** to contact the IRB. [redacted]

[redacted]

Your Consent

By signing this document, you are agreeing to allow your child to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to allow my child to participate in the study.

_____

Printed Child's/Student's Name

_____

Parent/Guardian's Signature Date

Consentimiento de los padres

Título del proyecto: Un estudio cuantitativo sobre el impacto de la intervención lingüística en estudiantes de jardín de infantes y primer grado en riesgo

Investigadora Principal: [redacted]

Invitación a ser parte de un estudio de investigación

Se invita a su hijo a participar en un estudio de investigación. Para participar, él o ella debe ser un estudiante de jardín de infantes o de 1er grado [redacted]. La participación en este proyecto de investigación es voluntaria.

Por favor, tómese el tiempo para leer todo este formulario y hacer preguntas antes de decidir si permite que su hijo participe en este proyecto de investigación.

¿De qué se trata el estudio y por qué lo estamos haciendo?

El propósito del estudio es determinar el efecto de la participación en el programa de intervención lingüística Story Champs en el desarrollo lingüístico de los estudiantes de kindergarten y primer grado.

¿Qué se les pedirá a los participantes que hagan en este estudio?

Si usted está de acuerdo en permitir que su hijo/a participe en este estudio, le pediré que haga lo siguiente:

1. Participe en el grupo experimental o en el grupo de control. El grupo experimental participará en el programa de intervención lingüística Story Champs y el grupo control no participará.
2. Los participantes que formen parte del grupo experimental recibirán una intervención diaria utilizando Story Champs, ya sea en el aula o como parte de un programa de intervención durante 12 semanas.
3. Los datos se recopilarán al principio y al final de la intervención para determinar si el programa tuvo un impacto en el rendimiento de los estudiantes.

¿Cómo podrían beneficiarse los participantes u otras personas de este estudio?

Beneficios directos] Los beneficios directos que los participantes deben esperar recibir al participar en este estudio son instrucción adicional para ayudar a los estudiantes a aumentar el desarrollo del vocabulario.

Los beneficios para la sociedad incluyen la recopilación de información sobre la efectividad de este programa de intervención lingüística en el rendimiento de los estudiantes.

¿Qué riesgos podrían experimentar los participantes por participar en este estudio?

Riesgo mínimo: Los riesgos esperados de participar en este estudio son mínimos, lo que significa que son iguales a los riesgos que su hijo encontraría en la vida cotidiana.

Soy un informante obligatorio. Durante este estudio, si recibo información sobre abuso infantil, negligencia infantil, abuso de ancianos o intento de hacerse daño a sí mismo o a otros, se me pedirá que lo informe a las autoridades correspondientes.

¿Cómo se protegerá la información personal?

Los registros de este estudio se mantendrán privados. Los informes publicados no incluirán ninguna información que permita identificar a un sujeto. Los registros de investigación se almacenarán de forma segura, y solo el investigador, el maestro de su hijo y la administración de la escuela tendrán acceso a los registros.
Los datos recopilados de su hijo pueden utilizarse en futuros estudios de investigación y/o compartirse con otros investigadores. Si los datos recopilados de su hijo se reutilizan o comparten, cualquier información que pueda identificar a su hijo, si corresponde, se eliminará de antemano.

- Los datos se almacenarán en una computadora bloqueada con contraseña y las copias impresas estarán en un archivador cerrado con llave. Después de 3 años, todos los archivos electrónicos se eliminarán y se destruirán todos los registros impresos

¿Cómo se compensará a los participantes por ser parte del estudio?

Los participantes no serán compensados por participar en este estudio

¿Es voluntaria la participación en el estudio?

La participación en este estudio es voluntaria. Su decisión de permitir que su hijo participe no afectará sus relaciones actuales o futuras con [redacted] Si decide permitir que su hijo participe, él/ella es libre de retirarse en cualquier momento sin afectar esas relaciones.

¿Qué se debe hacer si un participante desea retirarse del estudio?

Si decide retirar a su hijo del estudio o su hijo decide retirarse, comuníquese con el investigador a la dirección de correo electrónico o número de teléfono que se incluye en el siguiente párrafo. Si usted decide retirarlo o si su hijo decide retirarse, los datos recopilados de su hijo se destruirán inmediatamente y no se incluirán en este estudio.

¿Con quién se comunica si tiene preguntas o inquietudes sobre el estudio?

La investigadora que lleva a cabo este estudio es [redacted]

¿Con quién se comunica si tiene preguntas sobre los derechos como participante en la investigación?

Si tiene alguna pregunta o inquietud con respecto a este estudio y desea hablar con alguien que no sea el investigador, **le recomendamos que se comunique** con el IRB. [redacted]

Descargo de responsabilidad: La Junta de Revisión Institucional (IRB, por sus siglas en inglés) tiene la tarea de garantizar que la investigación con seres humanos se lleve a cabo de manera ética según lo definido y requerido por las regulaciones federales. Los temas tratados y los puntos de vista expresados o aludidos por los estudiantes y profesores investigadores son los de los investigadores y no reflejan necesariamente las políticas o posiciones oficiales de [redacted].

Su consentimiento

Al firmar este documento, usted acepta permitir que su hijo participe en este estudio. Asegúrese de entender de qué se trata el estudio antes de firmar. Se le entregará una copia de este documento para sus registros. El investigador conservará una copia con los registros del estudio. Si tiene alguna pregunta sobre el estudio después de firmar este documento, puede comunicarse con el equipo del estudio utilizando la información proporcionada anteriormente.

He leído y entendido la información anterior. He hecho preguntas y he recibido respuestas. Doy mi consentimiento para permitir que mi hijo participe en el estudio.

_____

Nombre impreso del niño/estudiante

_____

Firma del Padre/Tutor Fecha

APPENDIX B: District Permission Form

[redacted]

DATE OF PROPOSAL:
9/6/023

[redacted]

SCHOOL(S), CLASSROOM or LOCATION IN WHICH PROJECT IS BEING CONDUCTED:

[redacted]

APPROVAL RECEIVED FROM PRINCIPAL OR IMMEDIATE SUPERVISOR ☑ YES ☐ NO

RESEARCH START DATE: 9-18-23

ESTIMATED COMPLETION DATE: 12-19-23

Research Project Description

1. Title of Research Project:

The Impact of Language Intervention on At-Risk Kindergarten and First-Grade Students' Receptive and Expressive Vocabulary: A Quantitative, Quasi-Experimental Study

2. Describe the primary purpose of the research as well as the measurable objectives of the project.
Examples: "The aim of this study is to _____ (Determine/Measure/Gather information on/ Investigate the consequences/Test the theory/Analyze the impact/Develop deeper understanding of _____.

The aim of this study is to determine the efficacy of Story Champs, an evidence-based language intervention on the receptive and expressive vocabulary development of at-risk kindergarten and first-grade students.

3. Provide a brief description of the research and how it will address improvement of educational policy, programs or practices:

Most current interventions in the early grades focus on word recognition (decoding) skills, but research has shown that language proficiency in early childhood has a significant impact on reading comprehension, with direct correlation between preschool reading scores and fourth-grade reading achievement. This study seeks to determine the effectiveness of the evidence based intervention program Story Champs on the language development of children in kindergarten and first grade who are at risk for later comprehension based on below age and grade level expectations for receptive and expressive language.

4. How does the Research Project align with the strategic mission[redacted]
classroom? If a section is not applicable to your Research Project

- ☐ Professional development and support for instructional or support staff:
- ☐ Supervision and evaluation of instructional staff (and non-instructional staff, if applicable):
- ☑ Diverse learning needs of students:
- ☐ Use of technologies designed to enhance teaching and learning,
- ☐ Creating a safe, nurturing and orderly school environment that is conducive to learning for all students
- ☐ Engaging Parents, Community or Business partners

Data Requests: Please describe in detail any data or information that you are requesting from the District. This would include requests to administer surveys, conduct observations etc. Please be as specific as possible.

Language proficiency data will be collected using the standardized measures Peabody Picture Vocabulary Test, 5th ed. (PPVT-5) and Expressive Vocabulary Test, 3rd ed (EVT-3) with Form A. Students will be ranked according to percentile for both receptive and expressive vocabulary, and placed in either an intervention or control group with approximately 50 students in each group. Students in the intervention group will receive instruction 2-4 times per week using Story Champs. At the end of the study, students will again be administered the PPVT-5 and EVT-3 (form B), in this pre-test/post-test design to determine if the program is effective.

Other Relevant Comments:
Story Champs will be used by both early childhood interventionist [redacted]

[redacted]

My signature below certifies that:

- I have received a copy of the *Guidelines and Procedures for Conducting Research Affiliated with Aiken County Schools* and that I will comply fully with the policies and procedures outlined as part of my research
- I have reviewed all relevant policies and procedures as outlined in that document related to responsible conduct in research including those related to ethical conduct and confidentiality.
- I understand that while working as a researcher under the supervision of an Aiken County School District employee, I may have access to records and files that contain confidential information and that it is the employer's obligation to protect the rights of these files and/or individuals and that
- I will follow the operating practices and procedures required while handling these records and will not inappropriately access or disclose this information.
- I acknowledge that if I misrepresent or omit any information as requested on this application I have jeopardized my continued association with Aiken County School District and is cause for forfeiture of

[redacted]

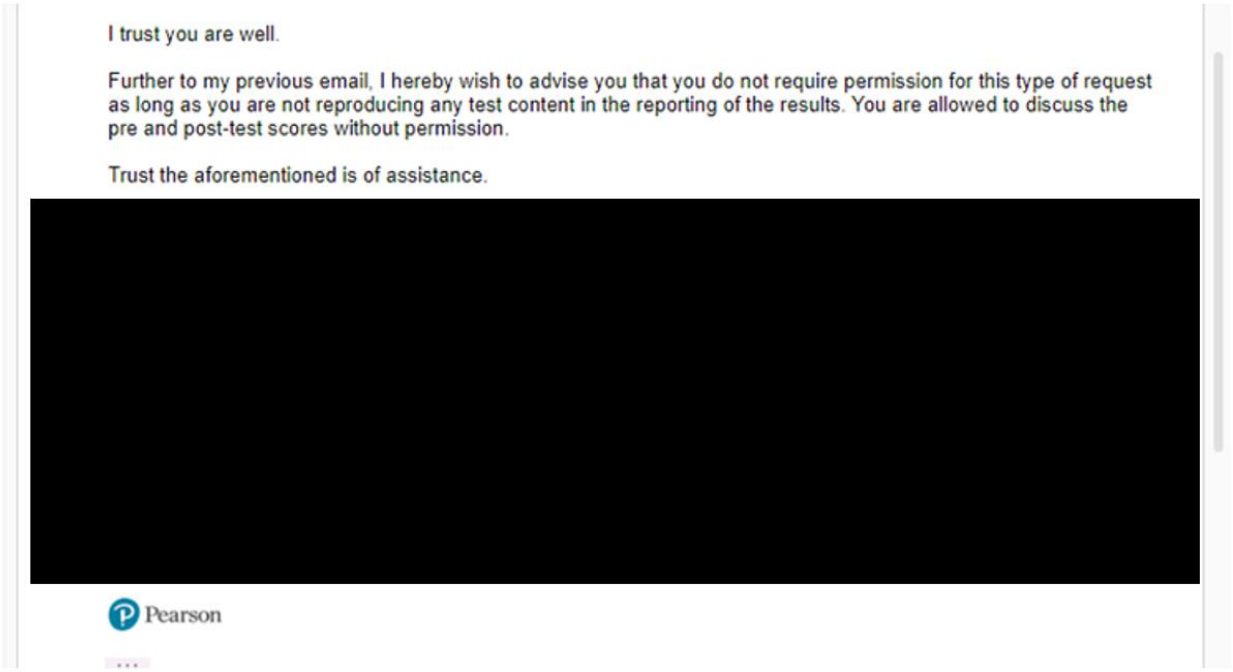
Date 9-6-2023

9/6/23

2/14/2024

DENIED

APPENDIX C: Permission to Use Screening Materials



I trust you are well.

Further to my previous email, I hereby wish to advise you that you do not require permission for this type of request as long as you are not reproducing any test content in the reporting of the results. You are allowed to discuss the pre and post-test scores without permission.

Trust the aforementioned is of assistance.

[redacted]

Pearson

APPENDIX D: IRB Approval

IRB #: IRB-FY23-24-487
Title: The Impact of Language Intervention on At-Risk Kindergarten and First Grade Students' Receptive and Expressive Vocabulary: Quantitative, Quasi-Experimental Study
Creation Date: 9-20-2023
End Date:
Status: Approved
Principal Investigator:
Entzminger Review Board:
Research Ethics Office Sponsor:

Study History

Submission Type Initial	Review Type Expedited	Decision Approved

Key Study Contacts

Member	Role Co-Principal Investigator	Contact
Member	Role Principal Investigator	Contact
Member	Role Primary Contact	Contact

APPENDEX E: Story Champs Sample Lessons

Removed to comply with copyright (Spencer & Peterson, 2018).

APPENDIX F: Notification of Intervention Letter

Date:

Dear Parent/Legal Guardian:

_____ will be receiving interventions for concerns related to:

The Multi-Tiered Systems of Support Team (MTSS) will be monitoring your child's progress. We want to make you aware of your child's needs and the intervention process. Your child was identified as a student who would benefit from additional intervention through either a universal screening tool, teacher concerns, or parent/guardian concerns. At this time, your child will receive intervention in the area(s) of: O Reading O Math O Language

- within the classroom with his/her teacher
- with an interventionist outside of the classroom (please note that if pulled out, the child will be seen during the classroom intervention block so that he or she does not miss whole group instruction).

The school's MTSS Team uses a process involving teachers and professional staff to assist students. Our school follows a student intervention model for assisting children as part of the Read to Succeed Legislation requirements. This is a process that allows each child:

- To receive interventions that are matched to his/her needs through small group instruction,
- Frequent progress monitoring to ensure progress toward grade-level goals,
- To be monitored by the MTSS team to make decisions regarding changes in instruction or goals
- To have progress reviewed by the team each month to change the level of intervention if needed to aid the child in making progress toward those goals.

As your child progresses through the process, progress monitoring reports will notify you of progress every 4 ½ weeks. These reports will be sent home with interim reports and report cards.

Your child's team will include his/her teacher, specially trained school staff in the areas of concern, and other relevant school personnel that may work with your child. Your input and participation are vital to ensure the best results. Please feel free to request a meeting to review your child's intervention process at any time. If you have any questions or concerns, please contact who can be reached via email or by phone

Sincerely,

_____ _____

Parent Signature Date

APPENDIX G: Training Certificates Story Champs

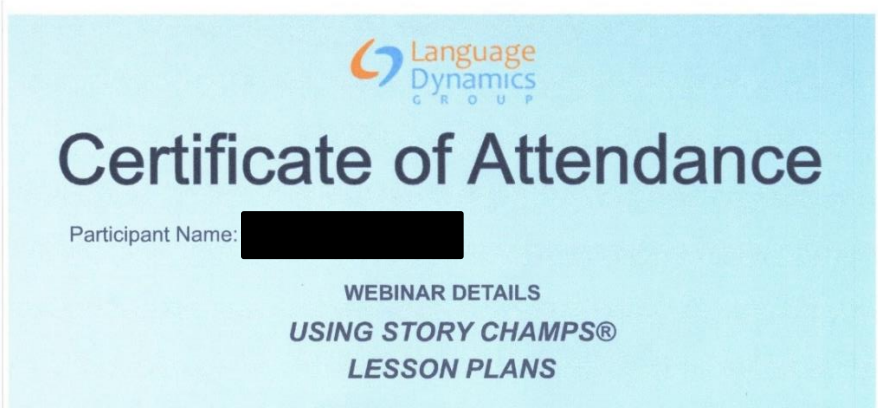
Certificate of Attendance

Participant Name: [redacted]

WEBINAR DETAILS

Story Champs® Small Group Intervention

Date: 6/20/2023



Language Dynamics GROUP

Certificate of Attendance

Participant Name: [redacted]

WEBINAR DETAILS

USING STORY CHAMPS®
LESSON PLANS

APPENDIX H: Sample PPVT-5

Removed to comply with copyright (Dunn, 2019).

APPENDIX I: Sample EVT-3

Removed to comply with copyright (Willliams, 2019).

APPENDIX J: Permission to Contact Parents

[redacted]

After careful review of your research proposal entitled The Impact of Language Intervention on At-Risk Kindergarten and First Grade Students Receptive and Expressive Vocabulary: Quantitative. Quasi-Experimental Study, I have decided to grant you permission to your study at [redacted] archival data as needed.

☑ I grant permission for [redacted] o contact parents of students identified for participation in the proposed study to invite their child to participate.

☑ The requested data WILL NOT BE STRIPPED of identifying information before it is provided to the researcher.

☑ We are requesting a copy of the results upon study completion and/or publication.

Sincerely,

APPENDIX K: Child Assent Form English

The Child's Consent to Participate in a Research Study

The students in the studio cannot read.

What is the name of the study and by whom?
The study's name is The Impact of Language Intervention for Kindergarten and First-grade Students

Why is doing this study?
wants to see if using Story Champs can help students learn to retell stories and use big words.

Why am I being asked to participate in this study?
You are asked to participate in this study because you are in kindergarten or first-grade here in.

If I decide to participate in the study, what will happen and how long will it take?
If you decide to participate in this study, you will continue to see your interventionist and participate in Story Champs until at least the Christmas holidays, but maybe more.

Do I have to participate in this study?
No, you do not need to participate in this study. If you would like to participate in this study, tell the investigator. If you do not want to, it's okay to say no. The researcher will not be angry. You can say yes now and change your mind later. It is up to you.

What if I have a question?
You can ask questions at any time. You can ask now. You can ask later. You can talk to the researcher. If you don't understand something, ask the researcher to explain it again.

Signing your name below means you want to participate in the study.

_____

Signature of witness Date

APPENDIX L: Child Assent Form Spanish

Consentimiento del niño para participar en un estudio de investigación

Los estudiantes del estudio no saben leer.

¿Cuál es el nombre del estudio y quién lo realiza?
El nombre del estudio es El Impacto de la Intervención Lingüística para Estudiantes de Kindergarten y Primer Grado y la persona que realiza el estudio es la

¿Por qué la está haciendo este estudio?
quiere ver si el uso de Story Champs puede ayudar a los estudiantes a aprender a volver a contar historias y usar palabras grandes.

¿Por qué se me pide que participe en este estudio?
Se le pide que participe en este estudio porque está en el jardín de infantes o en primer grado

Si decido participar en el estudio, ¿qué sucederá y cuánto tiempo tomará?
Si decides participar en este estudio, seguirás viendo a tu intervencionista y participando en Story Champs hasta al menos las vacaciones de Navidad, pero tal vez más.

¿Tengo que participar en este estudio?
No, no es necesario que participe en este estudio. Si desea participar en este estudio, dígaselo al investigador. Si no quieres, está bien decir que no. El investigador no se enojará. Puedes decir que sí ahora y cambiar de opinión más tarde. Depende de ti.

¿Qué pasa si tengo una pregunta?
Puede hacer preguntas en cualquier momento. Puedes preguntar ahora. Puedes preguntar más tarde. Puedes hablar con el investigador. Si no entiendes algo, pídele al investigador que te lo explique de nuevo.

Firmar con su nombre a continuación significa que desea participar en el estudio.

_____

Firma del testigo Fecha