

THE RELATIONSHIP BETWEEN READING FLUENCY AND LEXILE MEASURES

by

Joshua Steve Purvis

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

With increasing emphasis being placed on teachers to show an improvement in student achievement, schools are relying on indicators such as reading fluency and reading comprehension to gauge student progress throughout the year. Since the growth on these assessments are used in calculating teachers and administrators' yearly job evaluations, the significance of these measures has never been higher. Teachers and administrators want to know if the time spent on measures such as reading fluency is worth the sacrifice in the instructional day, when this time could be spent on teaching state mandated standards. The purpose of this quantitative non-experimental correlational study was to examine the relationship of reading fluency, the predictor variable, and reading comprehension, the criterion variable, among third, fourth, and fifth grade students from a rural, Title 1 school district in southwest Georgia. A Pearson product moment correlation was used to answer the following research question: Is there a relationship between a third, fourth, or fifth grade student's oral reading fluency score, as measured by Dynamic Indicators of Basic Early Literacy Skills, and their reading comprehension score, as measured by Scholastic Reading Inventory? The results of this study have determined a strong positive correlation exists between reading fluency and reading comprehension in grades three, four, and five. The inclusion of Lexile as the measure for reading comprehension did not diminish the relationship between reading fluency and reading comprehension. Further research is needed using Lexile as the measure for reading comprehension to broaden the generalization of this study.

Keywords: reading fluency, reading comprehension, Lexile, DIBELS, Scholastic Reading Inventory

Dedication

This dissertation is dedicated to my parents, Rev. Steve C. Purvis and Lynn G. Purvis. My father passed away unexpectedly on January 8, 2016, right in the middle of this doctoral journey.

My parents raised me in church. Every time the doors of the church were open, we were there. From the wake up calls early in the morning to the bedtime prayers every night, they modeled love and respect for me every day. My parents showed me the importance of reading the Bible, taught me how to pray, and introduced me to Jesus. I am thankful every day for the blessing of being the son of Steve and Lynn Purvis. My hope and prayer is to make as much of a positive impact on my children, as they made on me.

Remember the old path...

Acknowledgments

First, I would like to thank the Lord Jesus Christ for loving me despite my sin. I do not deserve His love and could never earn it, but He loves me anyway. This journey has been much more difficult than I imagined it would be. I had no idea the drastic changes in my personal and professional life that would take place during the journey. I am so thankful for a Savior that is always what I need Him to be; my strength, my refuge, my comforter, my encourager, my all in all. Through God's grace and guidance, I have met all the challenges of this endeavor.

Secondly, I cannot miss this opportunity to thank my beautiful wife, Stephanie R. Purvis. She has gone above and beyond the call of duty to help and support me along this journey. Everything I am and everything I will ever be is because of her. She has been my ear, my rock, my motivator, my reason for pressing on throughout this journey. She is the best wife that a man could ask for always giving of herself for her family and friends. She is also the best mother to our three children; Cade, Nora Kate, and Easton. I will forever be grateful for her sacrifices during this process.

Finally, I offer great appreciation to the members of my dissertation committee. Dr. Marni E. Kirkland, dissertation committee and curriculum director, has been a support system for several years. Her encouragement is one of the main reasons I started this journey. Dr. Kirkland saw something in me long before I saw it in myself. Her support and encouragement will forever be near my heart. Dr. L. Thomas Crites, my dissertation chair, has provided constant encouragement and positive feedback to help facilitate this journey. Dr. Michelle J. Barthlow, my research consultant, has been a steady source of prayer and encouragement throughout this endeavor. God certainly knew what He was doing when I crossed her path. I am so thankful for all her support, both professionally and personally.

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List of Abbreviations

College and Career Readiness Performance Index (CCRPI)

Dynamic Indicators of Early Literacy Skills (DIBELS)

National Reading Panel (NRP)

Scholastic Reading Inventory (SRI)

Statistical Package for the Social Sciences (SPSS)

Student Learning Outcome (SLO)

Word Correct Per Minute (WCPM)

CHAPTER ONE: INTRODUCTION

Overview

While numerous studies have been conducted to determine the relationship of reading fluency and reading comprehension, a gap in the literature was found regarding the relationship between reading fluency and reading comprehension among upper elementary school students where Lexile is used to calculate a reading comprehension score for each student. This study addresses a gap in the literature while providing teachers, administrators, and school districts with rationale for devoting instructional time to reading fluency in order to improve reading comprehension.

Background

The importance of early literacy cannot be overstated. One study revealed at least 75% of all students referred for special education services are recommended because of poor reading skills (U.S. Department of Education, National Center for Education Statistics, 2012). As students continue to progress through elementary school and into middle school without the ability to read, the chances of them dropping out of school before high school graduation continues to climb. Over 70% of students who drop out of school report difficulties with reading skills (Joshi, Binks, Hougen, Dahlgren, Ocker, & Smith, 2009). This is especially true for the reading skills of reading fluency and reading comprehension.

While these two reading skills are different, they depend on each other. Reading fluency has been known to have a strong predictive relationship with reading comprehension (Kim, Park, & Wagner, 2014). According to Munger, LoFaro, Kawryga, Sovocool, & Medina (2014), reading fluency and reading comprehension are significantly correlated with students' performance on standardized tests. However, the Munger et al. (2014) study used the Dynamic

Indicators of Early Literacy Skills (DIBELS) instrument for both reading fluency and reading comprehension. While numerous studies on the relationship of reading fluency and reading comprehension have been conducted, none have used Lexile as the measure for reading comprehension. If elementary school students' reading deficits can be quickly and properly identified in the primary grades of kindergarten through first grade, schools stand a chance of keeping these students enrolled in school and out of special education services.

Reading fluency was first introduced to the educational world as simply an indicator of reading ability. As more studies have been conducted, reading fluency is gaining momentum in modern education as a viable source of overall reading ability because of its close relationship with the other reading skills. According to Solari (2014), reading fluency has been found to have a strong, positive relationship with other foundational early literacy skills. As the use of reading fluency has increased in recent years, current research has shown reading fluency to be an effective tool for successfully identifying students with reading deficits (Fenty, Mulcahy, & Washburn, 2015). Studies have also been conducted to show the importance of reading fluency and its ability to predict higher level learners (Rasinski, 2014). Since the goal of reading is to have reading comprehension, this study is extremely important to schools, curriculum directors, and educational legislators (Kim, Petscher, Schatschneider, & Foorman, 2010). Recent research continues to show a relationship between reading fluency and various measures of reading comprehension (Paleologos & Brabham, 2011).

Reading fluency is utilized in many school districts in Georgia as a mandatory Student Learning Outcome (SLO). The SLO is an assessment given to students and is a required component on all teacher and administrator evaluations in the state of Georgia. The SLO assessment is given in a pre-test and post-test method to gauge student growth throughout the

course of the school year. Currently, school districts administer a reading fluency assessment at the beginning of the year and again at the conclusion of the school year. Reading fluency is used as the SLO assessment in second through fifth grade. While the current SLO structure ranges from pre-kindergarten through 12th grade, only second through fifth grade use this measure as the SLO because it is primarily related to early literacy. The growth of the student's reading fluency score from the first assessment to the final assessment is how the SLO is generated for many kindergarten through third grade classrooms.

Reading comprehension also has a significant role in modern education, as it is a major component of standardized tests. Without the ability to comprehend the text, students cannot successfully pass the various content areas on state-mandated standardized tests. Scholastic Reading Inventory is one program that measures reading comprehension. Scholastic Reading Inventory is an online program that features a reading comprehension instrument in which comprehension is measured in the form of Lexile levels. The Lexile levels are used to gauge and report the students' reading ability.

Lexile levels, much like reading fluency, is another reading tool that is becoming increasingly popular in modern education. Lexile is an important measure that is calculated and used in the state of Georgia as one indicator to evaluate the effectiveness of schools on the College and Career Readiness Performance Index (CCRPI). The CCRPI is the instrument used to measure the effectiveness of schools in Georgia. Schools that struggle to keep a high CCRPI score, risk state takeover. By including Lexile levels as two of the 11 indicators for elementary schools on the CCRPI rating system, the Department of Education places an extremely high value on Lexile levels. The attention to this measure must not be overlooked inside the classroom.

As reading fluency and reading comprehension have been integrated into modern elementary classrooms, teachers have to carefully plan lessons to ensure they are pushing students to reach higher levels of fluency and comprehension while still providing daily instruction on state-mandated standards. While teachers from different schools and different school systems approach reading in various ways, studies have identified effective teaching strategies to provide research based fluency instruction. One of the most effective strategies for increasing reading fluency and reading comprehension is repeated readings (Gorsuch & Taguchi, 2010).

Another effective instructional strategy for increasing reading skills is pre-reading activities. According to Alipanahi and Mahmoudi (2014), pre-reading activities have a significant positive impact on reading comprehension. Finally, prosody is an element of early reading that is vital to increasing reading fluency and reading comprehension (Schrauben, 2010). With an increasing amount of emphasis being placed on student growth, educators need to know if the skills that are being taught are going to result in an increase in growth on standardized tests and student learning objectives. The focus on seeing early evidence of student growth is also critically important for teacher and administrator evaluations, as classroom accountability is at an all-time high. Therefore, schools need to determine if the time spent on increasing a student's words read per minute is worth the investment from the instructional day.

While early literacy skills can be related to a number of learning theories, this study falls directly in line with the information processing theory. Proponents of the information processing theory have stated that the brain is only able to process a certain amount information at any one time (Miller, 2011). The capacity to process new information is significantly delayed as people learn new skills and new concepts. When students are first learning early literacy skills, they are

forced to devote most of their available brain capacity to decoding any new or unfamiliar words. When students can read more fluently, they are better able to effectively devote the available brain capacity to understanding the meaning behind the words rather than struggling to read the words on the page.

Problem Statement

The current body of literature includes ample research indicating the strength of the relationship between reading fluency and reading comprehension. However, the literature has not broadened the study of the relationship between reading fluency and reading comprehension to include the primary instruments that are utilized in many public elementary schools. While the correlation between reading fluency and reading comprehension has been established in professional research studies, none of the studies have used Lexile as the assessment to measure reading comprehension.

Another gap in the prior research was found as literature called for more studies on the relationship and predictability of reading fluency and reading comprehension in upper elementary grades, specifically in fifth grade (Munger et al., 2014; Scheffel, Lefly, & Houser, 2012). The literature also suggested more studies that include an untimed reading comprehension instrument, such as the Scholastic Reading Inventory (SRI), when performing a correlational study with reading fluency (Munger et al., 2014). Although teachers devote valuable instructional time to increase students' reading fluency, teachers have little proof that their efforts will result in an increase in reading comprehension using the Department of Education's recommended instruments and assessments. This dilemma is faced by teachers across the world and was the problem stated in this study. The problem is additional information is needed to analyze the strength of the relationship between reading fluency and reading comprehension

using current educational measures specifically for students from lower socioeconomic homes in upper elementary grades.

Purpose Statement

The purpose of this quantitative correlational study is to address a gap in the literature by examining the relationship of reading fluency, predictor variable, and reading comprehension, criterion variable, among third, fourth, and fifth grade students from a rural, Title 1 school district in southwest Georgia.

Significance of the Study

As increasing emphasis is placed on teachers to show growth in their students' reading ability while continuing to teach the standards necessary for success on standardized testing, many educators are questioning the loss of instructional time devoted toward teaching fluency. If a strong, positive relationship between reading fluency and reading comprehension can be established, pedagogical strategies, such as repeated reading or pre-reading, can be developed to increase both reading fluency and reading comprehension by first targeting reading fluency (Neddenriep, Fritz, & Carrier, 2011). The outcome of this research could impact curriculum and scheduling decisions of school systems currently weighing the importance of devoting valuable instructional time to teach these skills, as teachers and administrators will have evidence of the benefits of these instruments.

While other research studies have measured the relationship of reading fluency and reading comprehension, none have measured the relationship of these reading skills when they are generated from the DIBELS and SRI assessments. Since the DIBELS and SRI instruments are recommended by the Georgia Department of Education and are requirements for receiving a literacy grant through the Department of Education, the correlation between these two measures

is vitally important. The current body of research also called for more studies to examine the relationship between reading fluency and reading comprehension.

An analysis of the literature also revealed the need for more studies involving the reading comprehension skills of students from low socio-economic backgrounds, as these students may have academic concerns that inhibit their reading comprehension scores other than reading fluency (Paleologos & Brabham, 2011). Additional research is also needed to determine the relationship between reading fluency and reading comprehension, where both assessments are administered via technology (Fenty, et al., 2015). This study provided teachers, school and district leaders, and policy makers with evidence regarding the strength of the relationship between reading fluency and reading comprehension as measured by DIBELS and SRI, respectively. This study also added to the current body of research by answering questions presented in previous literature.

Research Questions

RQ1: Is there a relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ2: Is there a relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ3: Is there a relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

Definitions

1. *Reading Fluency* - Reading fluency is the ability to read a text accurately, quickly, and with expression (Neddenriep, 2011).
2. *Reading Comprehension* - Reading Comprehension is the ability to create a personal mental representation of the meaning of text (Walpole & McKenna, 2004).
3. *Prosody* - Prosody is the ability to read with proper phrasing, intonation, and expression (Walpole & McKenna, 2004).
4. *Lexile* - Lexile is a measure given to each text and reader for the purpose of matching a reader with an appropriate text (Educator's Guide, 2006).
5. *Decoding* - Decoding is the ability to break down a word into sounds (Walpole & McKenna, 2004).
6. *Instructional Reading* - Instructional reading is reading that occurs with text that may be a little challenging for the reader (Educator's Guide, 2006).
7. *Independent Reading* - Independent reading is reading that occurs with text that is increasingly easy for the reader (Educator's Guide, 2006).
8. *Repeated reading* - Repeated reading is reading and rereading a passage until achieving a satisfactory level of fluency (Gorsuch & Taguchi, 2010).
9. *DIBELS* - DIBELS, or the dynamic indicators of basic early literacy skills – assessment, is used to measure reading ability (Petscher, 2011).

CHAPTER TWO: LITERATURE REVIEW

Overview

Current literature is full of research on the importance reading comprehension. A modern trend in research involves the study of reading fluency. While some studies have analyzed the strength of the relationship between reading fluency and reading comprehension, no studies have included a continuous measure such as Lexile as the measurement for reading comprehension. This study also includes key research such as information processing theory, prosody, background knowledge, vocabulary, and benchmark assessments.

Introduction

As increasing weight is placed on educators through yearly teacher evaluations to show progress in their student data, more pressure is placed on educators to prioritize the instructional day. Of these priorities, a student's fundamental reading skills must not be overlooked. Teachers, students, parents, and administrators must understand the importance of early literacy. One growing trend in education is the use of instructional assessment measures such as reading fluency and reading comprehension as an indicator to determine the presence of early literacy strengths and weaknesses (Mercer, & Keller-Margulis, 2015).

Many districts across the nation use the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) as the primary instrument for measuring reading fluency (Paleologos & Brabham, 2011). School systems are also investing resources in programs that generate Lexile levels, such as Scholastic Reading Inventory (SRI). The increased use of DIBELS and SRI is evidenced by the Georgia Department of Education encouraging schools to use these measures in compliance with literacy grants available to schools. The Georgia Department of Education also

uses the SRI-generated Lexile levels from third and fifth grade students as one of many criteria used to evaluate school effectiveness.

Independently, the DIBELS and SRI measures can be used to evaluate a student's reading ability. However, if a strong relationship between these two measures can be clearly established, teachers will have the opportunity to use both measures to paint a much more accurate picture of the student's true reading ability. Therefore, teachers must understand the importance of reading fluency and its impact on reading comprehension. Without this understanding, the teachers cannot justify the instructional time spent on teaching and progress monitoring these skills. One problem that frequently arises with monitoring reading comprehension with SRI is typically that students do not participate in a Lexile assessment until third grade (MetaMetrics, 2013). However, reading fluency is first measured beginning in the second semester of first grade (Clemens, Shapiro, Wu, Taylor, & Caskie 2012). If a strong, positive relationship between reading fluency and Lexile can be proven, teachers in first and second grade can begin early identification of potential reading comprehension deficits in their students. This would allow ample time for extra reading support and interventions to be implemented inside the classroom to increase these skills before they ever develop into a significant reading deficit. This study examined the impact, if any, of reading fluency on reading comprehension among third through fifth grade, economically disadvantaged students. According to Kim et al. (2014), reading fluency has been widely known to have a strong, predictive relationship with reading comprehension. This study analyzed the relationship between reading fluency and reading comprehension with Lexile being as the measure of reading comprehension.

As curriculum directors at the state and local level place increasing emphasis on reading fluency, schools must respond by placing an increasing amount of value in their students'

reading fluency. The increased focus on reading skills is not always popular among teachers. Many teachers feel as if too much focus is being placed on reading fluency and not enough attention is being placed on reading comprehension. Another sentiment among teachers is the need to spend the available instructional time on reinforcing curriculum standards. All educators, regardless of their stance on time spent on reading fluency and reading comprehension, want to ensure the use of research based strategies as they educate students.

Educators, especially at the elementary level, have always been tasked with teaching students how to read. This task begins with letter recognition and learning how to make letter sounds while in kindergarten. The reading progression continues in first grade as students continue to learn about phonemes and letter patterns. As students enter second grade, they are expected to have a fluency score that reflects being able to read as many as 87 words per minute, while continuing to learn how to decode more challenging words. When students are in upper elementary grades, third through fifth grade, they continue to increase their reading fluency rates as they begin to decode multi-syllabic words and focus heavily on reading comprehension. This progression of skills reveals the fact that teachers are still expected to place significant value on reading fluency. In fact, in the state of Georgia, schools can receive additional funding from literacy grants by agreeing to closely monitor student progress on reading fluency and reading comprehension.

Research shows that students who read dysfluently spend their energy on identifying unfamiliar words rather than focusing on the meaning behind the words (Rasinski, 2014). If a reader cannot read the words on a page, they have no chance at understanding the meaning behind those words. However, the fact that a reader can read the words on a page does not mean they will be able to understand those words. The goal of increasing reading fluency is to also

show an increase in reading comprehension. This is the reason fluency is taught earlier in the reading progression than comprehension. Theoretically, if a strong relationship between these two reading skills can be established, pedagogical strategies can be developed to increase both areas by first targeting reading fluency. The outcome of this research could impact curriculum and scheduling decisions that schools will make in the future.

Theoretical Framework

A review of current literature revealed a wealth of information regarding reading fluency and reading comprehension. After analyzing the available resources for an appropriate learning theory that can accurately relate reading fluency and reading comprehension, the information processing theory was discovered. In order for a student to comprehend a text, they must first be able to read the words on the page. The information processing theory was the learning theory used to help evaluate this study. Proponents of the information processing theory stated that the brain can only process a certain amount of information or focus on a certain number of tasks at any one time (Miller, 2011). Therefore, readers that must intentionally focus on reading each word will not be able to devote efficient attention to the meaning behind the words. The result is a failure to demonstrate adequate reading comprehension.

Miller (2011) discussed the information processing theory in great detail. According to Miller (2011), the information processing theory is a “mental process children apply to the information and, as a result, how they transform, manipulate, and use that information” (p. 267). This developmental learning theory is relevant to this study because students are asked to participate in a mental process every time they engage in reading the content of a text.

The information processing theory was relative to this study on many different levels. The information processing theory has four main influences: strategies, knowledge, metamemory,

and capacity (Miller, 2011). All four of these influences have an impact on reading fluency and reading comprehension. Therefore, every component of the information processing learning theory was relative to this research topic.

Strategies are one of the main influences on the information processing theory. The strategies influence deals with the brain's ability to complete some activities effortlessly and seemingly automatic (Miller, 2011). This is the goal of reading fluency. According to Kim et al. (2014), reading fluently is a skill that students strive to complete effortlessly and automatically. The strategies associated with making a skill occur effortlessly and automatically and are developmental skills. Miller (2011) stated, "a major developmental change during the grade school and adolescent years involves learning to make use of one's limited capacity" (p. 284). In other words, one major hurdle that students must jump through is learning how to make better use of the available capacity for learning.

Just like all other skill sets, students have varying capacity available to devote to the completion of tasks. As students mature and better understand how to manage this capacity, they are able to complete more challenging tasks because their ability to multi-task is enhanced over time. When reading a text, older school children are more likely than younger children to separate relevant material from irrelevant material (Miller, 2011). This concept is also true when looking at reading comprehension. Students with more advanced reading comprehension strategies are better able to separate relevant material from irrelevant material in the text (Schrauben, 2010).

The next influence on the information processing theory is knowledge. The knowledge influence of this learning theory is an important factor in studying reading ability. According to Miller (2011), "numerous studies show that knowledge helps recall" (p. 285). This reinforces the

idea that students must have some background knowledge or exposure to the concepts of the text in order to accurately answer comprehension questions relating to the text. If a student is simply reading a passage for accuracy without the ability to comprehend the meaning behind the words, they will not obtain sufficient knowledge necessary to correctly answer related comprehension questions.

One way to enhance knowledge of the content while reading is to have the students underline or highlight key words in the passage. This draws their attention to these important words and increases the chances they will be able to recall these words in a recollection activity. Another effective strategy is to help the students make multiple associations with the words in the passages. Multiple associations increase the chances that a child will be able to recall a fact from the passage (Miller, 2011).

The third influence of the information processing theory that impacts reading ability is metamemory (Miller, 2011). The metamemory influence specifically applies to the strategies that are used to improve the students' reading ability. In essence, metamemory is understanding that one has a weakness in a certain area of memory. As individuals develop, they learn to have an understanding that sometimes it is necessary to make extra effort in order to retain information (Miller, 2011). When students understand and realize that they struggle remembering certain facts from a passage, they are much more likely to take ownership of learning strategies to improve this area.

Repeated reading is a strategy that is used to improve the chances of a student remembering what they have read. Repeated reading is a research based approach to improving reading fluency (Hawkins, Marsicano, Schmitt, McCallum, & Rusti-Rao, 2015). This strategy allows the reader additional access to the text and the opportunity to gain a deeper understanding of the

details in the story. When a teacher realizes a student is struggling with reading fluency, he or she can choose to implement some of these strategies to improve the students' reading comprehension ability.

The final influence of the information processing theory is capacity. The capacity influence is the influence that has the most relevance to this study. Capacity is the amount of information that a student can focus on at any one time. Miller (2011) stated, "a main constraint on a children's memory is their limited processing capacity" (p. 290). This is also true of reading ability. If a student must focus their entire processing capacity to decode words from the text, they will not have enough capacity left to devote to comprehending the text. This is because the brain is only able to process a certain amount of information at any one time (Miller, 2011).

Miller (2011) stated, "as children become more skilled readers, they can recognize words more quickly; they process the information faster" (p. 290). This concept is the basis behind many local school districts placing increased focus on reading fluency. According to Miller (2011), when cognitive skills are practiced they become more automatic and require less capacity. The thought is that if students can learn to read more fluently, they will be able to devote more attention to the meaning behind the words.

According to the information processing theory, an individual only has a certain amount of available brain capacity to devote to accomplishing daily tasks. This theory certainly applies to reading. If a student is devoting a significant portion of their available brain capacity to decoding the words on the page, then there is not much capacity left to focus on the meaning behind the words. However, if a student is able to read fluently, they will have enough brain capacity remaining in order to understand the meaning of the text. After reading a text, students are often asked to use that information to answer questions to prove their knowledge of the topic

and also their comprehension of the text. The information processing theory is extremely relevant to this study because reading fluently and comprehending what is being read are vital skills for students to become stronger readers.

Related Literature

Importance of Reading

The ability to read is the metaphorical key that will open many doors of opportunity in life. Without the ability to read, individuals are extremely limited in what paths will be available for them in life. Literacy is a vital and necessary component in the vast majority of jobs in the modern work place. Not only is literacy important for adults in the work place, but literacy is equally important for students in school. In fact, Dennis and Horn (2011) believed that the development of early literacy skills is critical to children's later success. The problem with literacy in our schools is not the fact that reading performance is dropping, but rather that quality, research-based reading instruction is not being provided to students when it is developmentally appropriate (Cuticelli, Collier-Meek, & Coyne 2015). Teachers, students, parents, and all other stakeholders need to know and completely understand the importance of reading.

The development of effective early literacy skills is the key to developing lifelong reading habits. According to Levitt and Red Owl (2013), early literacy plays a critical role in the development of reading skills and reading appreciation both early and later in life. Learning to become proficient with early literacy skills means developing the necessary decoding skills in order to pronounce the words on a page of text (Fountas & Pinnell, 2012). Not only can quality readers decode words on a page, but they can also possess a variety of other skills. Quality readers read with a purpose. The purpose of an individual choosing to read a text can vary from trying to become informed on a particular topic, trying to learn new strategies to improve his or

her life, and trying to expand their world beyond what can be seen. Quality readers learn to gain confidence in themselves as they expand their knowledge base, active vocabulary, and ability to understand others viewpoints (Fountas & Pinnell, 2012). Quality readers also develop the ability to make connections between texts and subject matter as they are constantly increasing their critical thinking skills in the process.

Reading is a critical skill in every language. Individuals from all cultures and ethnicities learn that reading is a necessary skill in order to become a productive member of society. Reading is a foundational skill, regardless of the native language of the reader. Reading has shown the ability to improve a student's exposure to a new language, increase knowledge of vocabulary, and improve writing ability (Rao & Babu, 2016). As students read and interact with words in a new language, the student's exposure to new words is greatly increased. The reading process also provides the student with numerous opportunities to expand their vocabulary by slowly incorporating the words they learn in written text in their oral language. The more students include the new vocabulary words into their spoken language, the easier it is for the students to use those words in their writing.

Reading is much more than something that is learned and practiced in school. As students become proficient with their reading skills, reading becomes a part of life. Proficient readers do not read only when they are required to do so. Proficient readers make time to read and are intentional in their efforts to acquire knowledge through text. Quality readers will make time to read a variety of texts including: newspapers, journals, magazines, books, blogs, websites, and social media. It must be noted that simply being a proficient reader does not guarantee that the individual will read voluntarily. According to Fountas and Pinnell (2012), some readers enjoy reading and do it voluntarily, while others read only when they are required to do so. However,

being a proficient reader gives the individual the opportunity to read at their convenience if they choose this activity to fill their spare time. Leisure reading has an impact on the way we think about others. Recent research revealed leisure reading improved understanding of minority groups, helped reduce stress, and improved communication skills with others (Watson, 2015).

Not only is being a proficient reader beneficial for adults, but being a proficient reader also has positive outcomes for students. Students that demonstrate proficiency in reading tend to perform more efficiently on standardized tests. A study conducted on seventh grade students revealed that students with higher levels of reading fluency scored higher on state standardized tests. (Hunley, Davies, & Miller, 2013). Nese et al., (2013) studied the relationship between reading fluency and student achievement on periodic progress monitoring assessments. This study focused on 1448 first through eighth grade students by analyzing growth on reading fluency assessments throughout the school year and its' impact on progress monitoring data points of a response to intervention model (Nese et. al., 2013). While research has indicated that reading fluency has a strong, positive relationship with other forms of achievement data, it is important to note the relationship between reading fluency and reading comprehension is not just a recent trend. According to Pinnell (1995), students in the top quartile in achievement on standardized tests were reading more words per minute, more minutes per day, and more hours per week than students in the bottom quartile in achievement on standardized tests. According to Fountas and Pinnell (2001), "In general, those who read more, and with more purpose and satisfaction, succeed more all the way around" (p. 3).

When students are in kindergarten, first grade, and second grade, tremendous growth occurs in their literacy skills. The span of learning that takes place during the elementary years is quite remarkable. Typically, students enter kindergarten and first grade with a vague notion of

what reading is all about. As students advance through the elementary school grades, they progress from a basic understanding of literacy into a more developed reader (Park, Chaparro, Preciado, & Cummings, 2015). The earlier students are exposed to early literacy skills the higher their academic ceiling becomes. Early reading in the primary grades establishes a strong educational foundation that will provide academic competence in later grades (Park, et al., 2015). This period of time is important in the development of students' literacy skills because the students learn to value reading as a tool of inquiry and to appreciate the contribution that reading can have on their lives. It is critically important that students receive literacy instruction when it is developmentally appropriate as opposed to through remediation and intervention strategies in the later years of elementary school.

While there are varying degrees of reading ability, there are also varying degrees of appreciation for reading. Donelson and Nilsen (2009) clearly defined the stages or levels of appreciation through which readers progress. The first stage is reading for enjoyment. In this stage, young readers have started to master the basic decoding skills and begin to become curious about the story or topic of the text. The second stage is reading for vicarious experiences. Here, readers want to know how other people feel as they seek to learn from the experiences of others. The third stage is reading to find yourself. In this stage, individuals select to read about characters and stories that may provide some insight and appropriate models to assist with dealing with problems faced on a daily basis. The next stage of appreciation of reading is reading to understand current issues. Here, students use literature to understand philosophical and social issues such as poverty war, racism, and religious differences. The final stage is reading for aesthetic appreciation of literary works. In this final stage, readers are drawn to literature as works of art with each text representing the unique writing abilities of the author.

Reading is a skill that is utilized in all academic content areas. As a student's reading ability increases in reading class, the student's reading ability also increases in other subjects. According to Hall, Maltby, Filik, and Paterson (2016), reading skills and reading comprehension strongly predict science learning in elementary school age students. Even state required standardized testing is heavily dependent on the ability to read. If the students cannot adequately read the questions and answers on the test document, they will be unable to understand the question and choose the correct answer. The importance of reading on standardized tests is even more important for the sections of the assessment that use reading passages as part of the questioning process.

The importance of reading has never been higher. As increasing emphasis is placed on improving student achievement in all academic areas, the importance of reading cannot be overstated. Under the No Child Left Behind Act, schools were evaluated on how well students performed on reading and math standardized tests (Bogin & Nguyen-Hoang, 2014) The unexpected outcome of the increased focus on reading and math was the rapid decrease of instructional time being spent on science and social studies content areas. Under the previously mentioned CCRPI school evaluation method, schools are held equally responsible for academic achievement gains among reading, math, science, and social studies. This is a stark contrast to how schools were evaluated under No Child Left Behind. By including science and social studies in the CCRPI measure, schools are held accountable for devoting instructional time to both content areas. Schools must prioritize the instructional day, with many choosing to sacrifice valuable reading time in order to provide quality instructional time for science and social studies instruction.

Definition of Reading Fluency and Reading Comprehension?

In order to accurately study reading fluency and reading comprehension, the terms must first be clearly defined. According to Schrauben (2010), reading fluency is the ability to read a text accurately, quickly, and with expression. Reading fluency is often measured by reading a passage in a certain amount of time, usually one minute. According to Neddenriep et al. (2011), a reading fluency score is measured by asking the students to read aloud from a grade appropriate passage for one minute. The reading fluency score is then determined by counting the number of words read minus the number of errors and omissions. The measurement for reading fluency is generally calculated to be a single number representing words correct per minute (WCPM). Reading fluency tests are strong predictors of performance on standardized tests (Paleologos & Brabhama, 2011).

Pagan and Sénéchal (2014) defined reading comprehension as a skill that requires children to read a text with fluency to integrate ideas, possess ample vocabulary to understand the content, and use strategies to process the meaning of the text. This skill is not to be confused with listening comprehension, as reading comprehension is gaining meaning from a written text instead of an auditory source. In reading comprehension, the student must gain the information from the text themselves. Therefore, if students cannot correctly read a text, they will be unable to have high levels of reading comprehension since they cannot access the meaning behind the words. While it is rare for a student to have low reading fluency and high reading comprehension, a more common occurrence is for students to have high reading fluency with low reading comprehension. This would reveal a processing issue in the student's reading comprehension skills, which should be targeted through intentional reading comprehension interventions.

Walpole, McKenna and Morrill (2011) defined reading comprehension as creation of a personal mental representation of the meaning of a text. Reading comprehension is enhanced when readers actively relate the ideas represented in print to their own knowledge and experiences. The best examples of reading comprehension occur when individuals can create complex mental images and representations in their memory. These types of images can be recalled when trying to answer questions about a passage or when attempting to retell the story.

Need for Benchmark Assessments

As increasing emphasis is placed on student achievement on standardized tests, schools need a way to determine gaps in the learning process before the results of the state-mandated tests return at the end of the school year. Benchmark assessments are specifically designed for this purpose. As students progress throughout the school year, schools administer benchmark assessments during predetermined testing windows. Typically, schools conduct benchmark assessments three times per year during the beginning, middle, and end of the school year. These assessments provide teachers with valuable information on their students. The assessments can be used to help identify learning gaps among the students so that small group instruction can be implemented to meet the students' specific needs on their ability level.

When schools are attempting to determine appropriate intervention and acceleration strategies for students, it is vital that the teachers analyze current student data in order to ensure they are providing the most appropriate level of instruction for their students. Assessing a student's needs is the first step toward addressing the student's needs (Walpole & McKenna, 2004). Benchmark assessments are utilized in schools to provide teachers with current student performance data (Abrams, McMillan, & Wetzal, 2015). Reading fluency and reading

comprehension are just two examples of benchmark assessments. Both instruments used in this study are intended to be implemented during periodic benchmark windows.

The data gathered from these assessments provide teachers with current student progress information from two distinct measures. This data can be used in a variety of ways. Teachers use benchmark assessment data to plan whole group instruction, determine student grouping during differentiation rotations, and keep the students and parents informed of student progress. Student grouping is defined as a system by which children are assigned to different instructional groups for the purpose of better addressing their needs (Walpole & McKenna, 2011). Benchmark assessments can occur in all subjects. However, the focus is typically on reading and math.

By administering benchmark assessments throughout the school year, teachers are provided with valid and reliable data from which to base their instructional decisions. As teachers form and reform instructional groups on a consistent basis, teachers can be sure that their instruction is developmentally appropriate for their students. This model not only supports students in need of remediation, but also high achieving students. Students that perform well on benchmark assessments can be pulled from the class and accelerated with higher-level content. For example, if a first grade student has an oral reading fluency score that is comparable to a fourth grader, the first grade student may not need core instruction on phonics and decoding. This student would need to be accelerated and provided instruction on vocabulary and reading comprehension. This decision would not be possible without the data gathered from periodic benchmark assessments.

Benchmark assessments should not be a surprise to students, parents, or teachers. The implementation of benchmark assessments should be a key component of the operations of the school. School stakeholders should expect these types of assessments as part of the routine of

school. According to Walpole and McKenna (2011), a well-designed reading program includes periodic benchmark assessments that are provided to teachers prior to the beginning of school. This allows teachers to carefully plan their units to incorporate current data from the benchmark assessments. By having a plan to incorporate student data throughout the year, teachers are much more likely to use the data to guide instructional decisions.

As benchmark data is collected and used to guide the instructional strategies used inside the classroom, teachers must not forget to communicate student progress with parents. Teachers must be intentional with sharing student data with parents. Parents are curious and desire to be informed of their child's progress in school. However, many parents are confused by the acronyms and educational jargon used by teachers (Byrd, 2011). Teachers must take time to explain the purpose of the assessments, the frequency of administration, and the scale by which the tests are scored. This communication keeps parents informed and engaged in the learning process.

By communicating with parents, teachers are also able to give parents instructional strategies that can be implemented at home. When parents understand the process, they are more likely to become an active member of the team. Walpole and McKenna (2011), recommended including parents in goal setting meetings with their children. One example would be to have parents and students attend a literacy night at school where teachers communicate students' current performance on benchmark assessments. The students and parents can work together to establish a reading goal for both reading fluency and reading comprehension that will be measured at the next round of benchmark assessments. After the next set of benchmark assessments have been completed, the students and parents return to gauge student progress

toward the reading goals that were established earlier in the year. The process is then repeated as the goals are then updated for the following benchmark.

Significance of Reading Fluency

Reading fluency is such a foundational concept for reading skills that many researchers insist on devoting a significant portion of the instructional day to literacy. According to Walpole and McKenna (2011), schools that provide students with 180 minutes of uninterrupted literacy instruction show significant gains in student achievement on standardized tests and also on benchmark assessments such as reading fluency. In fact, Walpole and McKenna (2011) urged schools to analyze their daily schedule in an attempt to increase instructional time that could be devoted to literacy instruction. Additional instructional time can be found during extended day programs, summer school camps, and early morning reading programs. These approaches are much more effective than the traditional route of extending time commonly referred to as retention (Range, Pijanowski, Holt, & Young, 2012). Regardless of the method selected to provide additional instruction in the foundational reading skills such as reading fluency, uninterrupted time for literacy instruction every day is essential to the growth and development of young readers.

Reading fluency is often a student's first interaction into discovering the wonderful world of literacy (Beauchat, 2012). Students cannot become lifelong readers if they do not have an adequate amount of reading fluency. When students are confident in their ability to read, they are much more likely to spend their spare time on reading-oriented tasks (Annamalai & Muniandy, 2013). The ability to read exposes students to vocabulary, grammar, and concepts that they would not normally encounter. This broadens the student's knowledge base and provides the student with proper examples of correct grammar.

Effective Strategies for Increasing Reading Fluency

While there are many strategies currently in use that are designed to specifically increase reading fluency, some have proven to be more effective than others. One of the most effective methods in increasing reading fluency is pre-reading activities. According to Alipanahi and Mahmoudi (2014), pre-reading activities are a process that enables students to read and to comprehend higher level texts, because they provide the necessary background to organize the activity and to comprehend the materials. Essentially, this strategy allows the student to interact with the content of the text before actually reading the text. This can occur in a variety of methods including picture identification, vocabulary review, or historical stories. For example, if a student is reading a book on horseback riding as a pre-reading activity, the student may review flash cards with pictures and corresponding vocabulary on each card. This process will familiarize the student with the concepts that will be discussed in the book they will read. Once the student is familiar with the content, he or she will be more likely to read the text fluently. As the information processing theory demonstrates, this will leave ample brain capacity to devote to comprehension.

Another effective strategy for increasing reading fluency is repeated readings. Repeated readings is a research based approach to improving reading fluency (Hawkins et al., 2015). This strategy allows the reader additional access to the text and the opportunity to gain a deeper understanding of the details in the story. An example of repeated readings would be allowing students to independently read a passage for 60 seconds. At the end of the 60 seconds, the students mark the last word they read. Next, the teacher leads the class in chorally reading the entire passage. Finally, the students independently read the passage again for 60 seconds. At the end of 60 seconds, the students will once again mark the last word they read. The student should

have read more words on the final attempt than the first attempt simply because of their increased familiarity with the content and the words on the passage.

According to Gorsuch and Taguchi (2010), repeated reading is one method of building fluency and appears to be effective in increasing the reading fluency and reading comprehension of students. This method provides many benefits. Students have the opportunity to read the passage independently as they attempt to decode any words that are unfamiliar. When students read the passage chorally, they are able to hear those difficult words correctly pronounced and gauge their accuracy in decoding the words independently. Choral reading also provides the student with an opportunity to work on their prosody. This is vital to early reading as most students read in chopped fragments instead of flowing paragraphs. When students are allowed to read information multiple times, they are able to initially focus on reading the words.

According to Schrauben (2010), “one instructional practice that has been used successfully for over three decades and is one of the best-known methods for improving fluency is the method of repeated reading (p. 87). Schrauben speaks directly about the relationship between fluency and comprehension, “the essence of fluency is only the ability to decode and to comprehend text at the same time” (p. 83). As students continue to read the same passage numerous times, a student’s confidence as a reader significantly increases. Students are able to trust themselves as they attempt to read content faster. As students’ confidence in reading increases, so does their motivation to try and increase their reading ability.

Several other studies have also supported the use of repeated reading. The National Institute of Child Health and Human Development (2000) conducted an exhaustive study on reading. They found that repeated oral reading procedures had a statistically significant, positive impact on word recognition, reading fluency, and reading comprehension across a wide range of

grade levels. They further concluded that the positive results of repeated reading strategies applied to all students regardless of race, gender, age, and reading ability. This implies that repeated reading is just as effective for strong readers as it is for readers that experience reading difficulties. The correlational studies conducted by the National Institute of Child Health and Human Development (2000) suggested that the more children read, the better their reading fluency, vocabulary, and reading comprehension will be. However, Walpole and McKenna (2011) cautioned these findings by stating the results are correlational in nature and correlation does not imply causation. Just as with any skill, the more students read, the more their reading skills will improve, but it is possible that good readers simply choose to read more.

Importance of Reading Comprehension

Reading is an extremely complex and multifaceted process that begins and ends with meaning (Fountas & Pinnell, 2012). Reading for meaning or comprehending should be the goal of every single text that is read. The same should be true of all instruction provided to students while at school. Since the passing of the No Child Left Behind Act of 2001, much attention has been given to the development of a students' reading ability (Paleologos & Brabham, 2011). Aliphani & Mahmoudi (2014) stated that the purpose of reading is comprehension. This means one skill is the result of another skill. If the purpose of reading is not comprehension of text, why else would a person read? Therefore, the goal of any reading intervention should work to increase reading comprehension.

As more emphasis is continually placed on student performance on standardized tests, the importance of reading comprehension continues to increase. In fact some researchers believe that children's reading success and achievement on standardized tests will be measured according to whether they can derive meaning from print (Snow, 2002). This concept is demonstrated every

year through student's performance on standardized tests. Every year teachers devote significant instructional time to teaching science and social studies standards. However, when students take the standardized tests in these content areas at the conclusion of the school year, student achievement is typically low. This is due to the fact that even though the students have been taught the academic standards, they may not be able to comprehend the actual questions on the test.

Emergence of Lexile

Lexile measures are a relatively new concept in education. However, the Lexile movement is picking up significant traction in school districts across the country. In Georgia, school effectiveness is measured by various indicators on the College and Career Readiness Performance Index (CCRPI). Two of the indicators on the CCRPI are directly related to student Lexile scores, one for third grade students and the other for fifth grade students. As schools are being held accountable for their student's Lexile scores, the emergence and dependence on Lexile measures in education is clear.

The Lexile framework consists of two measures. The first is a Lexile text measure. The text measure is a specific number assigned to any text, as computed by a Lexile Analyzer (Educator's Guide, 2006). The Lexile Analyzer is a computer program that evaluates the text to measure reading characteristics related to reading comprehension such as syntactic complexity or word frequency (Educator's Guide, 2006). The Lexile Analyzer generates a Lexile measure for each text. The Lexile number assigned to a text describes the difficulty of the text. The Lexile text measure places texts on a sliding scale of difficulty because each text is scored independently of other texts.

The second measure in the Lexile framework is Lexile reader measure. The Lexile reader measure is a score generated from the Scholastic Reading Inventory which is similar to a standardized test for reading comprehension (Educator's Guide, 2006). This measure differs from the Lexile text measure in that the Lexile reader measure values the individuals reading comprehension ability as opposed to text complexity. The Lexile reader measure allows individuals to be placed on a sliding scale depending on their Lexile score.

Since both Lexile measures generate a sliding scale score that uses the same numbering system, the scores of equal values can be paired together. When a reader is matched with an appropriate text using the two Lexile measures, the reader is paired with a text that is both engaging and appropriate. When both Lexile text measures and Lexile reader measures are used in conjunction with one another, the reader is able to locate texts that are instructionally and developmentally appropriate for their reading ability (Educator's Guide, 2006). This process helps ensure that students are matched with texts of an appropriate complexity for their current reading skillset. The Lexile measures can be used to help motivate new or struggling readers to succeed by allowing the students to choose high-interest texts on a lower Lexile measure to increase the students' confidence with reading (Educator's Guide, 2006). For example, a student may be interested in racecars, but the first text they grab in the library may be entirely too difficult for them to read. The Lexile level will allow the student to choose a book on their interest level, while also monitoring for an appropriate text.

Even though a specific Lexile reading measure is generated for each individual, readers can also read books within a Lexile range; a specific band of Lexile numbers above and below their individual reading measure (Educator's Guide, 2006). However, as students move up and down the Lexile range selecting books, they will notice the difficulty of each text changes. For

example, when students move down from their Lexile reading measure to select a book, they encounter texts that are increasingly easy to read. Likewise, when students move up from their current Lexile reading measure to select a book, they encounter texts that are increasingly challenging.

Impact of Background Knowledge and Vocabulary on Reading

The importance of background knowledge cannot be overstated. In a study regarding background knowledge, Fisher et al. (2012) stated, “an individual's background knowledge develops through interaction with people, places, experiences, internet sources, texts, and content formally taught” (p. 23). A student will draw from these experiences as he or she seeks to explore new content and interact with new material. The issue of background knowledge is certainly present in students from homes of high poverty. If a student has never had any interaction with a certain concept, they are less likely to master new, relative content than a group of peers that is very familiar with the concept.

Fountas and Pinnell (2012) believed that it is not enough for readers to grasp the meaning of individual words from a text. Rather, the reader must comprehend pages and chapters from the text. In order to comprehend the text in its entirety, the reader must continually build meaning from the first page of the text to the last (Fountas & Pinnell, 2012). The reader brings a certain level of understanding to the text they are reading. As the reader continues to read the words of the text, they synthesize the information from the text as they integrate it with their prior knowledge and understandings (Fountas & Pinnell, 2012). This process involves bringing personal knowledge to the literature and analyzing information from the text in order to merge the two sources of information as to construct a new set of meanings or understandings. The

reader accesses the meaning behind the text but also adds to the meaning through their individual interpretation based on their personal experiences (Fountas & Pinnell, 2012).

The lack of background knowledge is clearly present in reading. Students with little to no background knowledge on a topic will have a difficult time comprehending the text and understanding the vocabulary (Fisher et. al., 2012). For example, if a student does not have any background knowledge with parasailing, he or she is not likely to read a passage on the benefits of parasailing fluently. This is because the words and concepts in the passage are new to the student. However, if a student's family parasails regularly, that student will be much more likely to demonstrate higher fluency on the passage as they are more comfortable with the content because of their background knowledge.

As students are exposed to the growing environment and society, their background knowledge continually grows. Unfortunately, for students from homes of high poverty, they generally only experience life within their small community, and most stay within their neighborhood. By the time students enter seventh grade, they should be able to read just about any text that they have the background knowledge to understand (Fountas & Pinnell, 2012). The experiences that the students bring to reading is critical to their ongoing development as a reader as well as a student. Fountas and Pinnell (2001) stated:

“Every reader of a text gains a different set of meanings because of his unique connections with knowledge and the world, the personal emotions or memories that might arise, and the sum total of experiences drawn from reading other texts.” (p. 306)

Fisher et al. (2012) also stated, “if all of the cognitive efforts are focused on decoding or vocabulary, there is little working memory left for comprehension and developing background knowledge” (p. 24). Working memory is the capacity the brain has to learn new tasks while

continuing to conduct other tasks (Miller, 2011). This clearly points back to the information processing theory with a lack of capacity available to focus on comprehension. The concept of background knowledge reinforces the information processing learning theory. According to Miller (2011), “numerous studies show that knowledge helps recall” (p. 285). This reinforces the idea that students must have some knowledge of the content in order to accurately answer comprehension questions from the text. If a student is simply reading a passage for accuracy and unable to comprehend the meaning behind the words, he or she will not have the knowledge necessary to correctly answer comprehension-related questions.

Vocabulary is also an important component of reading fluency and reading comprehension. Even though vocabulary plays a pivotal role in the development of reading skills of all readers, vocabulary instruction is not an easy task for educators to teach (Ribeiro, Cadime, Freitas, & Viana, 2015). According to Walpole et al. (2011), vocabulary development represents one of the single greatest challenges to modern educators. This is due to the vocabulary gap that exists between proficient readers and struggling readers. The gap between the vocabulary abilities of proficient and struggling readers appears to grow larger over time.

Other studies have also been conducted on vocabulary. Sparks (2015) reported the students who enter school with the richest vocabularies expand their active vocabularies much more quickly than students with lower vocabularies. This makes the task of closing the achievement gap a true challenge for educators. The challenge of increasing a student’s vocabulary is especially difficult for students from low socio-economic backgrounds. Students from low socio-economic families are not exposed to rich vocabulary like students from professional homes. In fact, recent research suggests that four-year-old children from professional homes have a higher active vocabulary than children from homes of poverty. Hart

and Risley (2003) stated, “In four years, an average child in a professional family would accumulate experience with almost 45 million words, an average child in a working-class family 26 million words, and an average child in a welfare family 13 million words” (p. 6). This is due to the amount of exposure to rich vocabulary students experience in the professional homes. Exposure to vocabulary can occur in many ways such as through story book reading or listening to others speak. The most effective vocabulary instructional strategies occur through direct and indirect instruction (Walpole et al., 2011).

Prosody’s Effect on Reading Fluency and Reading Comprehension

Reading fluency is commonly defined as reading text accurately, quickly, and with proper expression (Noltemeyer, Johnson, & Watson, 2014). Prosody involves reading with expression and is commonly defined to be the tone of speech, rhythm, stress, and intonation that a reader often uses when reading a text (Ben-David, Multani, Shakuf, Rudzicz, & van Lieshout, 2016). Struggling readers demonstrate low levels of prosody, as they must devote most of their attention to decoding the words on the page. However, more advanced readers will demonstrate much higher levels of prosody, as they read with automaticity and can devote their available attention to reading with inflection. Reading with high levels of prosody makes the text more interesting and easier to stay engaged with the story. When the reader is highly engaged with the text, they are much more likely to remember what they have read. This will result in higher levels of reading comprehension.

The concept of prosody is also directly related to information processing theory (Paige, Rasinski, Magpuri-Lavell, & Smith, 2014). The theory of automatic information processing deals with how much information the brain can attend at any one time. As mentioned above, advanced readers demonstrate the ability to decode words with automaticity. Reading with automaticity

provides the reader with the ability to devote more brain capacity to reading with prosody. This concept is a perfect example of the information processing theory. According to Paige et al. (2014), prosody is relative to both the information processing theory and reading fluency.

Schrauben (2010), used the analogy of a thermometer to relate prosody to reading fluency. This analogy provides something tangible to relate to fluency. Schrauben (2010) stated, “The high temperature on the thermometer is not the disease itself, but only an indicator that a person is sick” (p. 83). Therefore, fluency can be used as a measure to gauge a student’s reading ability in order to predict a deeper reading deficit. Research shows that students who read dysfluently spend their energy on identifying unfamiliar words rather than focusing on the meaning behind the words (Rasinski, 2014). If the student has a low reading fluency along with low prosody, then there is obviously something much deeper going on in this skill set that needs attention.

The Impact of Reading Fluency on Reading Comprehension

Aliphani & Mahmoudi (2014) described the purpose of reading as comprehension. This means reading comprehension should be the result of all other foundational reading skills. If the purpose of reading is not comprehension of text, the reason to read is lost. Therefore, the goal of any reading intervention should work to increase reading comprehension. As students are able to get the words off of the page, they are more capable of understanding the meaning behind the words. Kuhn et al. (2010) stated, “automatic recognition of text is speculated to allow children to focus on the meaning of the words that are being read rather than allocate limited attentional resources to the decoding of unfamiliar words” (p. 2).

Just like all other skill sets, students have varying capacity available to complete tasks. As students mature and better understand how to manage this capacity, they are able to

successfully complete more challenging tasks. When reading a text, older school children are more likely than younger children to separate relevant material from irrelevant material (Miller, 2011). This concept is also true when looking at reading comprehension. Students with more advanced learning strategies are better able to separate relevant material from irrelevant material in the text (Schrauben, 2010).

The skills of reading fluency and reading comprehension are very much dependent on each other. Until a reader achieves fluency, which usually does not occur until second or third grade, reading comprehension is prone to suffer. This is attributed to too much conscious attention being directed at word identification and decoding and too little attention being devoted to comprehending the words that are being read.

Summary

Reading is a vital skill, not only in elementary school, but in life. Without the ability to read, poor readers struggle to function in modern society. As schools increase their focus on this necessary skill, more attention is placed on the sub-skills of reading; reading fluency and reading comprehension. The research clearly shows the significance of reading fluency and reading comprehension in isolation. Research also supports a strong, positive relationship between reading fluency and reading comprehension.

The relationship between reading fluency and reading comprehension fits the mold of the information processing theory. This theory reveals the limit of an individual to devote their attention to a certain number of tasks at one time. If a student must spend their attention on reading fluency, they have little left to process the meaning behind the words and demonstrate adequate reading comprehension. Therefore, students must have a firm grasp on reading fluency before they are able to make gains in reading comprehension.

Reading fluency and reading comprehension are not the only reading skills that individuals must demonstrate to be an effective reader. Skills such as prosody, vocabulary, and background knowledge also factor heavily in the reading ability of students. Research shows students with poor reading prosody cannot have adequate reading fluency. Further research indicates students with poor vocabulary struggle to read fluently because of their struggle with the new words in the text. Finally, research shows that students with poor background knowledge of the subject will have a poor reading fluency because of their unfamiliarity with the content of the text.

CHAPTER THREE: METHODS

Overview

A Pearson product-moment correlation was used to evaluate the strength of the relationship of reading fluency and reading comprehension among third, fourth, and fifth grade students at a Title 1 school district in southeast Georgia. The participants from 10 elementary schools were exposed to the same protocol for assessing reading fluency and reading comprehension. Reading fluency was measured by the DIBELS instrument. The SRI instrument was used to measure reading comprehension. Both instruments were shown to be valid and reliable for this study.

Design

A non-experimental bivariate correlation design was used in this study. Of the possible correlation statistics, a Pearson product-moment correlation was used in this study. A Pearson product-moment correlation is a type of non-experimental research design that the researcher uses to determine the strength of the relationship between the predictor and criterion variables (Gall, Gall, & Borg, 2007). This bivariate correlational statistic was selected for this study because the researcher wanted to determine the strength of the relationship between the predictor and criterion variables, where both variables are continuous scores (Gall et al., 2007).

A Pearson product-moment correlation was used to evaluate the strength of the relationship of reading fluency, the predictor variable, and reading comprehension, the criterion variable (Gall et al., 2007). In reference to other correlational studies, some researchers label the predictor and criterion variables as dependent and independent, respectively. However, in this study, the variables will be notated as predictor and criterion, as the variables will not be manipulated. The Pearson r , as measured by the relationship between reading fluency and

reading comprehension, was represented by r , where r equals the strength of the relationship between the two variables. The strength of the relationship was then gauged on a scale from -1 to 1, where -1 equals a perfect negative relationship and 1 equals a perfect positive relationship (Warner, 2013). A Pearson product-moment correlation design allowed the researcher to either reject or fail to reject the first null hypothesis. This process will be repeated for third grade, fourth grade, and fifth grade student data from DIBELS and SRI.

Research Questions

RQ1: Is there a relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ2: Is there a relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ3: Is there a relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

Hypotheses

The null hypotheses for this study are:

H₀₁: There is no statistically significant relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

H₀2: There is no statistically significant relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

H₀3: There is no statistically significant relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

Participants and Setting

The target population for this study was third, fourth, and fifth grade students from a Title 1 school district located in southwest Georgia. Participants in this study were 669 third grade students, 512 fourth grade students, and 500 fifth grade students from 10 pre-kindergarten through fifth grade elementary schools, which exceeds the minimum sample size of 121. (Warner, 2013). The school district selected for this study is racially and socio-economically diverse with 75% of students in the county receiving free and reduced lunch. The overall racial breakdown of the students from the target population was: 45% Caucasian/White, 27% Black/African American, 25% Hispanic, and 3% other.

A convenience sample was used to select participants in this study since the researcher needs a sample that suits the purpose of this study (Gall et al., 2007). The convenience sample consisted of 865 males and 815 females for a total of 1680 participants. According to Warner (2013), this sample size allowed the researcher to test the null hypothesis with an alpha level of .05 and a statistical power of .7, while maintaining a medium effect size. To reach the target participant number, all third, fourth, and fifth grade students from all 10 elementary schools were selected as participants. The racial breakdown of third grade students from the sample was: 0.4% Asian, 46.9% Caucasian/White, 24.8% Black/African American, 24.8% Hispanic, 0.3% Pacific

Islander, and 2.7% Multi-racial. The racial breakdown of fourth grade students from the sample was: 0.8% Asian, 40.0% Caucasian/White, 29.5% Black/African American, 24.4% Hispanic, 1.2% Pacific Islander, and 4.1% Multi-racial. The racial breakdown of fifth grade students from the sample was: 0.6% Asian, 49.5% Caucasian/White, 24.2% Black/African American, 21.8% Hispanic, 0.2% Pacific Islander, and 3.6% Multi-racial. The demographics of the sample may not exactly match the demographics of each grade's total population. However, a convenience sample allows the results of the study to be generalized to the total population of fifth grade students within the target population (Gall et al., 2007).

For this study, a rural Title I school district was selected as the target location. The school district was located in southwest Georgia and was home to 14 schools. This school system was comprised of 10 elementary schools, one middle school, one junior high school, and one high school. This model was unique for the area in that the middle school was for sixth and seventh graders, while the junior high school was for eighth and ninth graders. Finally, the high school was for 10th, 11th, and 12th grades. The 10 elementary schools averaged approximately 545 students per school, while the middle school, junior high school, and high school averaged approximately 1435 students per school. Historically, the leadership and teaching force was very stable in this school district as most of the teachers and administrators were born and raised in the county and moved back to become an educator. However in recent years, a large number of administrators and teachers have retired or moved on to pursue other career opportunities. According to Simon and Moore Johnson (2015), the high number of turnover among educators is a growing trend in modern education, especially among school districts that serve a large portion of students from low income families.

According to the U.S. Census Bureau (2014), the community is home to almost 50,000

people, with approximately 9,500 students enrolled in the school system. The education levels of the community are 71.4% graduated from high school, while only 12.9% graduated college with a bachelor's degree or higher. The per capita income was \$16,972, which is below the Georgia average of \$25,427 (U.S. Census Bureau, 2014). With an extremely low per capita income compared to the state average, a large percentage of students in this district lived in homes of poverty. This is further evidenced by the Title I distinction given to the school system. Title I schools receive additional funds from the government for serving students from low socio-economic families.

All third, fourth, and fifth grade elementary students were administered the DIBELS reading fluency and SRI reading comprehension assessment three times during the school year. The DIBELS reading fluency instrument was used to measure each participant's reading fluency. The SRI instrument was used to measure each participant's reading comprehension. The students completed the assessment, using the corresponding instrument at the beginning, middle, and end of each school year. This data was used to gauge student progress through the foundational reading strategies implemented system wide, as well as determine the response to those strategies by measuring the reading comprehension ability of each student. Student data from the middle of the year testing window were utilized.

The setting of the reading fluency and reading comprehension assessments was in a classroom at each of the six elementary schools. The assessments were administered in early December 2015. The DIBELS instrument was administered in a secluded, quiet space inside the school. The DIBELS assessment was facilitated by a certified teacher in a one-on-one setting with each student. The teachers positioned themselves at a table across or beside the student. The student was sitting in front of an assessment book containing the required passages, while the

teacher was sitting in front of a computer containing the passages on the internet. Since the assessment was scored via the computer, the student data was immediately available for review upon completion of the test.

The SRI instrument was administered in a whole group setting inside the computer lab. The SRI assessment was facilitated by a certified teacher and a computer lab specialist. Students completed the assessment in groups of up to 25, as there are only 25 desktop devices inside the computer lab. Much like the DIBELS assessment, the SRI instrument was scored via the computer so data from the assessment is immediately available for review. The same setting was used at each of the different schools. Since the students completed the assessments at their home school, the only difference in the setting of each school was the appearance of the classroom, as they were each decorated and arranged differently.

Since these assessments counted as part of the teachers and administrator's yearly evaluation, the testing environment had to remain secure and consistent among all schools. Therefore, the assessments were administered by a certified teacher who had been trained to proctor the assessments. Rather than train the entire staff, the school system decided to train a few individuals at each school and form an assessment team to administer the assessments during each of the three testing windows. This practice helped to ensure the security and fidelity of the testing environment. The members of the assessment team were fully trained in facilitating the DIBELS and SRI assessments in order to ensure the consistency of delivery to the participants across different schools.

The members of the assessment team have administered these assessments for an average of three years. The training was implemented at the school level, prior to the beginning of each school year, to train any new members of the assessment team and provide a refresher training to

existing members of the team. All assessment team members were provided with a script to read to participants prior to the start of the DIBELS or SRI assessments in order to ensure the same directions were provided for all participants. The DIBELS instrument was administered in a one-on-one environment where the participants read aloud three passages, one minute each. The SRI instrument was administered in a group setting in the computer lab, where each participant completed the assessment on individual computers with headphones. All assessments were completed at or near the same time in order to diminish or eliminate the possibility of outside distractions influencing other participants in the study and to ensure consistency of the collected data.

Instrumentation

Archival data was utilized for the purposes of this study. The request for data was given in writing to the Director of Curriculum at the district office. Archival data was selected for this study as the instruments being researched were already used by the selected school system and an individual license was purchased for each student. The school system was in the third year of utilizing these instruments to measure reading fluency and reading comprehension. Since the school system used these assessments as an SLO, the level of security during test administration matched that of the end of year standardized testing. By selecting participants and proctors that were familiar with the instruments, the researcher was able to control for any invalidations of resulting assessment data that could have occurred if the participants and proctors were completing the assessments for the first time.

Screening tests are frequently used in schools to alert teachers to the presence of a learning deficit in a particular content area. One example of a screening test is the DIBELS battery. The DIBELS battery is comprised of several subtests to gauge a student's reading

ability. One of the subtests is the DIBELS oral reading fluency assessment. The purpose of the DIBELS oral reading fluency instrument is to measure the number of words read correctly in one minute.

The DIBELS data is reported as a number representing words correct per minute (WCPM) with a scale from zero to around 200-300, depending on the length of the passage. A fifth grade student performing on grade level will read at least 130 wcpm. The student reads three separate passages of equal text difficulty. The passages with the highest and lowest wcpm are dropped and the student's reading fluency score will be the wcpm on the middle passage. The instrument takes about five minutes to administer from start to finish. The DIBELS reading fluency instrument has been used in numerous current research studies (Scheffel et al., 2012; Paleologos & Brabham, 2011; Fenty et al., 2015; Munger et al., 2014).

Initial research and development of DIBELS occurred in the late 1980s and continued into the early 1990s. The DIBELS program was founded based on the research from Curriculum-Based Measurement (Deno & Fuchs, 1987) and General Outcome Measurement (Fuchs & Deno, 1991). The purpose in the design of the DIBELS instrument was to be an assessment that is both economical and efficient in gauging a student's progress toward the mastery of reading skills (Voyager Sopris, 2014). DIBELS was first published in 2002 after initial research focused on examining the technical adequacy of the individual measures of reading (Good & Kaminski, 1996). Since publication, DIBELS has gained widespread use for monitoring the acquisition of early literacy skills (Voyager Sopris, 2014). DIBELS has been field-tested in over 90 schools across the United States from 2006 to 2010. According to the Voyager Sopris Training Manual (2014), "An ongoing program of research over the past two decades has continued to document the reliability and validity of DIBELS as well as its sensitivity in measuring changes in student

performance over time” (p. 1).

The DIBELS reading fluency instrument has been analyzed by numerous peer reviewed journal articles and dissertations. Evidence of reliability was reported by three peer reviewed articles and one dissertation with all reporting test-retest, interrater, and alternate form reliability coefficients exceeding .80. (Good, Simmons, and Kame’enui, 2001; Fien, 2004; Francis, et al., 2008;) Concurrent validity ranged from medium to high (Mdn = .71) across seven peer reviewed articles (Cook, 2003; Greene, 2002; Francis et al., 2008; Kamps et al., 2003; Riedel, 2007; Roehrig et al., 2008; Schilling et al., 2007;). Three peer-reviewed articles reported predictive validity values within the moderate to high range (Mdn = .68) (Burke & Hagan-Burke, 2007; Reidel, 2007; Roehrig et al., 2008). DIBELS reading fluency demonstrated the strongest reliability and criterion-related validity of any fluency instrument across multiple peer reviewed articles, dissertations, and technical reports (Goffreda, 2010).

Another example of a screening instrument is the Scholastic Reading Inventory (SRI). SRI an instrument used to gauge a student’s reading comprehension ability. Specifically, the purpose of the SRI instrument is to measure reading comprehension in the form of Lexile levels. The data is reported as a number representing the students’ Lexile level, which ranges from zero (beginning reader) to above 1700 (collegiate level). Every grade level has a corresponding Lexile level that is used to determine if a student can comprehend grade level content. For example, a fifth grade student, performing on grade level would have a Lexile level of 800 or higher. In this example, a fifth grade student, with a Lexile level below 800 would have a reading comprehension score that falls below grade level expectations. A teacher can look at the student’s Lexile level and determine what grade level material the student can comprehend. This can be done by matching the student’s Lexile level with the appropriate grade level band that the

score falls within.

During the SRI assessment, the computer provides the student with several appropriate reading passages, based on the student's previous Lexile level. After the student reads the passage, the student answers a series of corresponding comprehension questions. The SRI assessment is adaptive in the facilitation of the test. When a student answers a question correctly, the difficulty of the following questions and/or passages increases. However, if a student answers a question incorrectly, the difficulty of the following questions and/or passages decreases. The student's reading comprehension score adjusts throughout the assessment depending on how the student performs on the test. This process continues as the test continues to adapt throughout the assessment until a final, true reading comprehension score is generated by the software program. This score is reflected in the student's Lexile level. The SRI assessment takes about 25 minutes to administer.

The SRI instrument was evaluated by two separate studies and returned a marginal reliability of .94 (Linacre, 2010; MetaMetrics, 2013). The SRI instrument was compared to seven other reading comprehension measures to determine validity and returned coefficients between .800 and .849 (Williamson, Thompson, & Baker, 2006). The Scholastic Reading Inventory has been used in several studies (Buie, 2014; Parker, Holland, & Jones, 2013; Proctor et al., 2014).

Procedures

The researcher approached a Superintendent in a local school district to obtain permission to conduct the study in their school district. The researcher sought IRB approval prior to beginning the study (see Appendix A). The researcher obtained written permission to collect data from ten elementary school. The researcher wrote a letter was written to the Director of Curriculum to gain access to student data records for the purposes of research. Upon approval, the records were provided to the researcher. Some academic records were made available electronically, while some records were provided on hard-copy spreadsheets. After obtaining the data, the records were returned back to the Director of Curriculum's office. The students' names were listed on the records. However, no personal or identifying information was disclosed in order to maintain a high level of confidentiality and anonymity.

The records contained each third, fourth, and fifth grade student's reading fluency score, as measured by DIBELS, and reading comprehension score, as measured by SRI. Each student's scores were entered into an Excel spreadsheet. To protect anonymity and confidentiality, the students' names were removed and replaced with sequential case numbers beginning with one and ending with 1680. Each student's gender was coded with 1 = male or 2 = female.

Once the Excel spreadsheet was complete, the researcher asked an outside person to verify the correctness of the information listed on the spreadsheet. Once the accuracy of the data was confirmed, the researcher uploaded data into Statistical Package for the Social Sciences (SPSS) Version 22. The researcher used SPSS to run the statistical analysis necessary for this study. The hard copy of the data was securely stored in a locked file cabinet in the researcher's office. The researcher maintained the only key to the lock on the file cabinet. An electronic copy of the data file was secured on the researcher's computer. Only the researcher had the login

credentials to this computer. Finally, the data was backed up on a secure thumb drive. When not in direct possession of the thumb drive, the device was securely locked in the aforementioned locked file cabinet.

The information on the records was not made available to anyone other than the researcher and the dissertation committee. Personal or identifying information was not be made public or published. The researcher will maintain the records from this study for a three year period beginning at the conclusion of this study. At the end of the three-year period, the information will be shredded, and the thumb drive will be destroyed in a proper manner.

Data Analysis

A Pearson product-moment correlation was conducted to evaluate the first null hypothesis that there is no statistically significant relationship between a third grade students' oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory (N=669). The Pearson product moment correlation was used to examine the null hypothesis at an alpha level of .05 and a statistical power of .7 in order to maintain a medium effect size (Warner, 2013). A Pearson product moment correlation was the most appropriate form of analysis because the researcher determined the strength of the relationship between two continuous variables (Gall et al., 2007). The sample size used for the Pearson r was 669, which was above the correlational design requirement of 121 (Warner, 2013).

The predictor variable was reading fluency score. The criterion variable was reading comprehension score. The data was screened for outliers using a Box and Whisper plot for each variable. The assumption tests were completed prior to analyzing data. Since the sample size was greater than 50, a Kolmogorov-Smirnov test was used to determine normality. Based on the

Central Limit Theorem, since the sample size was larger than 30, normality was assumed (Warner, 2013). Independent observations were conducted in order to ensure research assumptions were not compromised. A scatter plot was used to analyze the assumption of bivariate outliers and linearity. These scatter plots allowed the researcher to determine if the assumptions were tenable.

The assumption of bivariate normal distribution was also analyzed using a scatter plot. The researcher was looking for a “cigar shape” on the scatter plot. Descriptive statistics, including mean and standard deviation, were calculated on both variables and included in the results section. Pearson’s r was analyzed to determine the strength of the relationship between the two variables. If r equals a number between -1 and -.08 or .08 and 1, a strong relationship exists between the two variables (Warner, 2013). The researcher was looking for a significance of less than .05 ($p < .05$). In addition to the Pearson’s r (r), the researcher calculated and reported the number of participants (N), degrees of freedom (df), significance level (p), and the power.

A Pearson product-moment correlation was also conducted to evaluate the second null hypothesis that there is no statistically significant relationship between a fourth grade students’ oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory ($N=512$). The Pearson product-moment correlation was used to examine the null hypothesis at an alpha level of .05 and a statistical power of .7 in order to maintain a medium effect size (Warner, 2013). A Pearson product-moment correlation was the most appropriate form of analysis because the researcher determined the strength of the relationship between two continuous variables (Gall et al., 2007). The sample size used for the Pearson r was 512, which was above the correlational design requirement of 121 (Warner, 2013).

The predictor variable was reading fluency score. The criterion variable was reading comprehension score. The data was screened for outliers using a Box and Whisper plot for each variable. The assumption tests were completed prior to analyzing data. Since the sample size was greater than 50, a Kolmogorov-Smirnov test was used to determine normality. Based on the Central Limit Theorem, since the sample size was larger than 30, normality can be assumed (Warner, 2013). Independent observations were conducted in order to ensure research assumptions were not compromised. A scatter plot was used to analyze the assumption of bivariate outliers and linearity. These scatter plots allowed the researcher to determine if the assumptions were tenable.

The assumption of bivariate normal distribution was also analyzed using a scatter plot. The researcher was looking for a “cigar shape” on the scatter plot. Descriptive statistics, including mean and standard deviation, were calculated on both variables and included in the results section. Pearson’s r was analyzed to determine the strength of the relationship between the two variables. If r equals a number between -1 and -.08 or .08 and 1, a strong relationship exists between the two variables (Warner, 2013). The researcher was looking for a significance of less than .05 ($p < .05$). In addition to the Pearson’s r (r), the researcher calculated and reported the number of participants (N), degrees of freedom (df), significance level (p), and the power.

Finally, a Pearson product moment correlation was conducted to evaluate the third null hypothesis that there is no statistically significant relationship between a fifth grade students’ oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory ($N=499$). The Pearson product moment correlation was used to examine the null hypothesis at an alpha level of .05 and a statistical power of .7 in order to maintain a medium

effect size (Warner, 2013). A Pearson product moment correlation was the most appropriate form of analysis because the researcher was determining the strength of the relationship between two continuous variables (Gall et al., 2007). The sample size used for the Pearson r was 499, which was above the correlational design requirement of 121 (Warner, 2013).

The predictor variable was reading fluency score. The criterion variable was reading comprehension score. The data was screened for outliers using a Box and Whisper plot for each variable. The assumption tests were completed prior to analyzing data. Since the sample size was greater than 50, a Kolmogorov-Smirnov test was used to determine normality. Based on the Central Limit Theorem, since the sample size was larger than 30, normality can be assumed (Warner, 2013). Independent observations were conducted in order to ensure research assumptions were not compromised. A scatter plot was used to analyze the assumption of bivariate outliers and linearity. These scatter plots allowed the researcher to determine if the assumptions were tenable.

The assumption of bivariate normal distribution was also analyzed using a scatter plot. The researcher was looking for a “cigar shape” on the scatter plot. Descriptive statistics, including mean and standard deviation, were calculated on both variables and included in the results section. Pearson’s r was analyzed to determine the strength of the relationship between the two variables. If r equals a number between -1 and -.08 or .08 and 1, a strong relationship exists between the two variables (Warner, 2013). The researcher was looking for a significance of less than .05 ($p < .05$). In addition to the Pearson’s r (r), the researcher calculated and reported the number of participants (N), degrees of freedom (df), significance level (p), and the power.

CHAPTER FOUR: FINDINGS

Overview

A Pearson product-moment correlation was used to show a strong positive relationship between reading fluency and reading comprehension among third, fourth, and fifth grade students. The research questions were analyzed individually to find the strongest relationships among third and fifth grade students. The reading fluency and reading comprehension scores were not normally distributed among the 1680 participants. To ensure the accuracy of the Pearson product-moment correlation, a non-parametric Spearman's rho statistic was employed to reinforce the findings of the strength of the relationship between reading fluency and reading comprehension.

Research Questions

RQ1: Is there a relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ2: Is there a relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

RQ3: Is there a relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory?

Null Hypotheses

H₀₁: There is no statistically significant relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

H₀₂: There is no statistically significant relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

H₀₃: There is no statistically significant relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

Descriptive Statistics

There were a total of 1680 participants for all three grades, with an almost equal split between males and females within each grade. For third grade, there were slightly more females (51.3%) than males (48.7%), while for grades four and five there were slightly more males (51.8%, 54.9%) than females (48.2%, 45.1%). In terms of ethnicity, almost half of all participants were Caucasian for all three grades, followed by African American and Hispanic. The remaining participants were of Pacific Islander, Asian or mixed ethnicity. The demographic characteristics per grade are presented in Table 1.

Table 1
*Demographic Characteristics for Third, Fourth, and Fifth Grade Students from a Title I School
 District Located in Southwest Georgia*

		<u>Third</u>		<u>Grade</u>		<u>Fifth</u>	
		<u>Freq</u>	<u>Percentage</u>	<u>Forth</u>	<u>Percentage</u>	<u>Freq</u>	<u>Percentage</u>
Gender	Female	343	51.3	247	48.2	225	45.1
	Male	326	48.7	265	51.8	274	54.9
Ethnicity	Asian	3	0.4	4	0.8	3	0.6
	Af. Am	166	24.8	151	29.5	121	24.2
	Hispanic	166	24.8	125	24.4	109	21.8
	Pac. Is.	2	0.3	6	1.2	1	0.2
	Mixed	18	2.7	21	4.1	18	3.6
	Caucasian	314	46.9	205	40.0	247	49.5

Notes. Freq = Frequency, Af. Am. = African American, Pac. Is. = Pacific Islander

The third grade participants had a mean SRI score of 495.56 (SD = 249.69) and a mean ORF score of 101.65 (SD = 40.36). The SRI scores had a negative skewness (-0.186) and a negative kurtosis (-0.351), indicating that increasingly fewer participants have low scores and the tails are lighter and the peak is flatter than the normal distribution. In contrast, the ORF scores had a positive skewness (0.307) and a positive kurtosis (0.684), indicating that more participants have low scores and the tails are heavier and the peak is sharper than the normal distribution. The fourth grade participants had a mean SRI score of 585.35 (SD = 236.43) and a mean ORF score of 110.15 (SD = 37.11). The SRI scores had a negative skewness (-0.321) and a positive kurtosis (0.055), indicating that increasingly fewer participants have low scores and the tails are heavier and the peak is sharper than the normal distribution. In contrast, the ORF scores had a positive skewness (0.180) and a positive kurtosis (0.137), indicating that more participants have low scores and the tails are heavier and the peak is sharper than the normal distribution. The fifth grade participants had a mean SRI score of 719.19 (SD = 240.71) and a mean ORF score of

122.82 (SD = 41.48). The SRI scores had a negative skewness (-0.549) and a positive kurtosis (0.687), indicating that increasingly fewer participants have low scores and the tails are heavier and the peak is sharper than the normal distribution. In contrast, the ORF scores had a negative skewness (-0.105) and a positive kurtosis (0.174), indicating that increasingly fewer participants have low scores and the tails are heavier and the peak is sharper than the normal distribution. The SRI and ORF scores descriptive statistics per grade are presented in Table 2.

Table 2
*Descriptive Statistics for the SRI and ORF Scores for Third, Fourth, and Fifth
 Grade Students from a Title I School District Located in Southwest Georgia*

<u>Grade</u>	<u>Test</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Min</u>	<u>Max</u>	<u>Skewness</u>	<u>Kurtosis</u>
Third	SRI	495.56	249.69	0	1271	-0.186	-0.351
	ORF	101.65	40.36	5	269	0.307	0.684
Fourth	SRI	585.35	236.43	0	1258	-0.321	0.055
	ORF	110.15	37.11	7	249	0.180	0.137
Fifth	SRI	719.19	240.71	0	1303	-0.549	0.687
	ORF	122.82	41.48	0	267	-0.105	0.174

Results

Null Hypothesis One

H₀1

The first null hypothesis was tested as follows:

H₀1: There is no statistically significant relationship between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

The Pearson product moment correlation was used to examine the first null hypothesis. Before the correlation model was applied, the SRI and ORF data were scanned for outliers using a Box and Whisper plots. In addition, a scatter plot was used to analyze the assumption of bivariate linearity as well as to identify any outliers. There were a total of seven outliers that were removed, resulting in a sample size of 662 participants. The shape of the scatter plot confirmed the assumption of linearity, as presented in Figure 1. When the SRI and ORF variables were tested for normality using the Kolmogorov-Smirnov test, the null hypothesis was rejected ($D(662) = 0.053, p = .000, D(662) = 0.041, p = .000$). The tests indicated that the SRI and ORF variables are not normally distributed. A Pearson product-moment correlation coefficient was computed to assess the relationship between the SRI scores and the ORF scores. There was a high positive correlation between the predictor variable ORF and the criterion variable SRI, $r = .752, n = 662, p = .000$. The df for this calculation was 667 with a power of 1.00. Increases in the predictor variable ORF were associated with increases in the criterion variable SRI for the third grade participants.

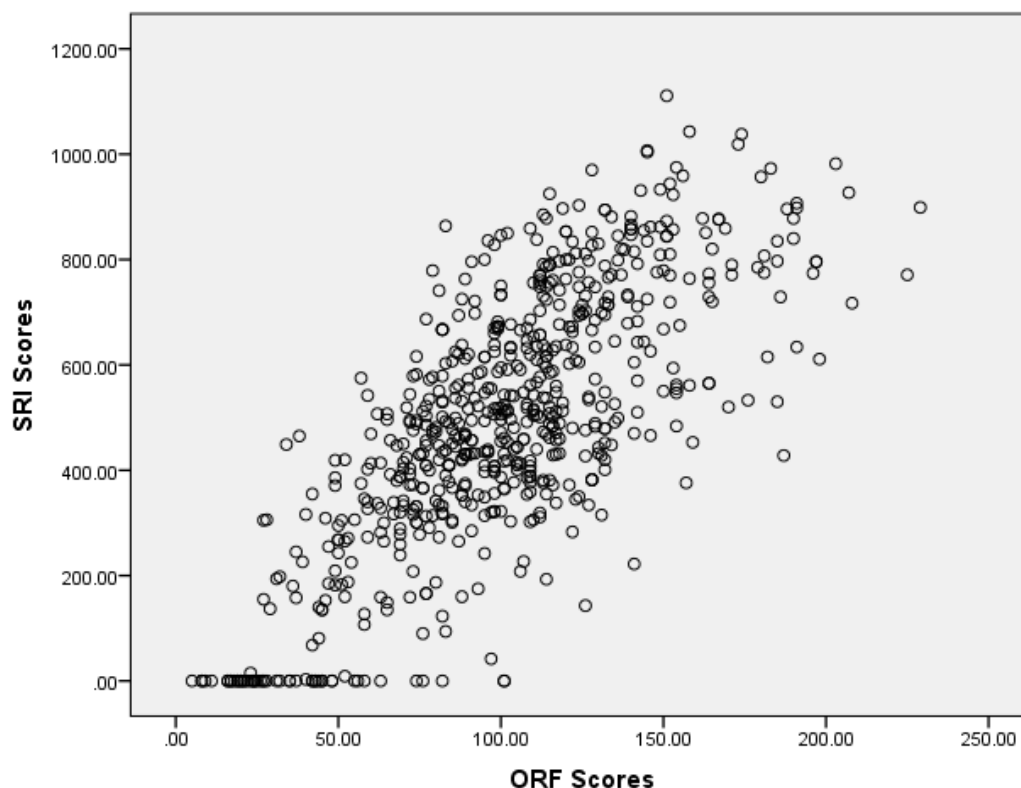


Figure 1. Scatter plot illustrating the association between the SRI scores and the ORF scores for Grade 3 participants.

Null Hypothesis Two

H₀₂

The second null hypothesis was tested as follows:

H₀₂: There is no statistically significant relationship between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

The Pearson product moment correlation was used to examine the second null hypothesis. Before the correlation model was applied, the SRI and ORF data were scanned for outliers using a Box and Whisper plots. In addition, a scatter plot was used to analyze the assumption of bivariate linearity as well as to identify any outliers. There were a total of four outliers that were removed, resulting in a sample size of 508 participants. The shape of the

scatter plot confirmed the assumption of linearity, as presented in Figure 2. When the SRI and ORF variables were tested for normality using the Kolmogorov-Smirnov test, the null hypotheses could not be rejected ($D(508) = 0.037, p = .095, D(508) = 0.036, p = .166$). The tests indicated that the SRI and ORF variables are normally distributed. A Pearson product-moment correlation coefficient was computed to assess the relationship between the SRI scores and the ORF scores. There was a moderate positive correlation between the predictor variable ORF and the criterion variable SRI, $r = .693, n = 508, p = .000$. The df for this calculation was 510 with a power of 1.00. Increases in the predictor variable ORF were associated with increases in the criterion variable SRI for the fourth grade participants.

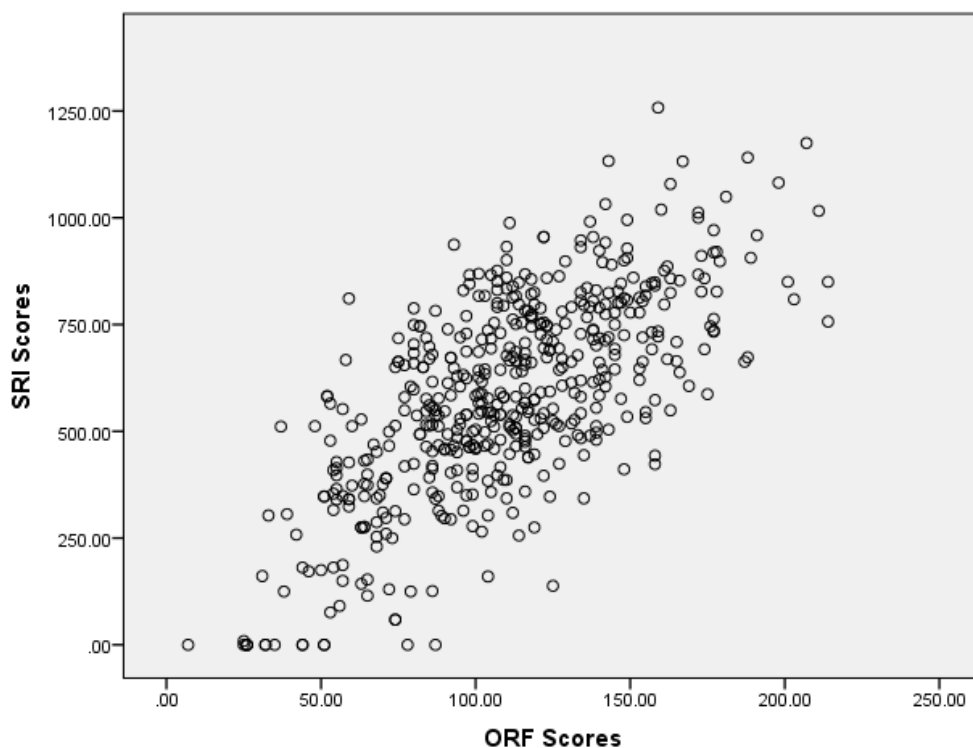


Figure 2. Scatter plot illustrating the association between the SRI scores and the ORF scores for Grade 4 participants.

Null Hypothesis Three

H₀₃

The third null hypothesis was tested as follows:

H₀₃: There is no statistically significant relationship between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory.

The Pearson product moment correlation was used to examine the third null hypothesis. Before the correlation model was applied, the SRI and ORF data were scanned for outliers using a Box and Whisker plots. In addition, a scatter plot was used to analyze the assumption of bivariate linearity as well as to identify any outliers. There were a total of five outliers that were removed, resulting in a sample size of 494 participants. The shape of the scatter plot confirmed the assumption of linearity, as presented in Figure 3. When the SRI and ORF variables were tested for normality using the Kolmogorov-Smirnov test, the null hypotheses were rejected ($D(494) = 0.079, p = .000, D(494) = 0.020, p = .020$). The tests indicated that the SRI and ORF variables are not normally distributed. A Pearson product-moment correlation coefficient was computed to assess the relationship between the SRI scores and the ORF scores. There was a strong positive correlation between the predictor variable ORF and the criterion variable SRI, $r = .745, n = 494, p = .000$. The degrees of freedom for this calculation were 497 with a power of 1.00. Increases in the predictor variable ORF were associated with increases in the criterion variable SRI for the fifth grade participants.

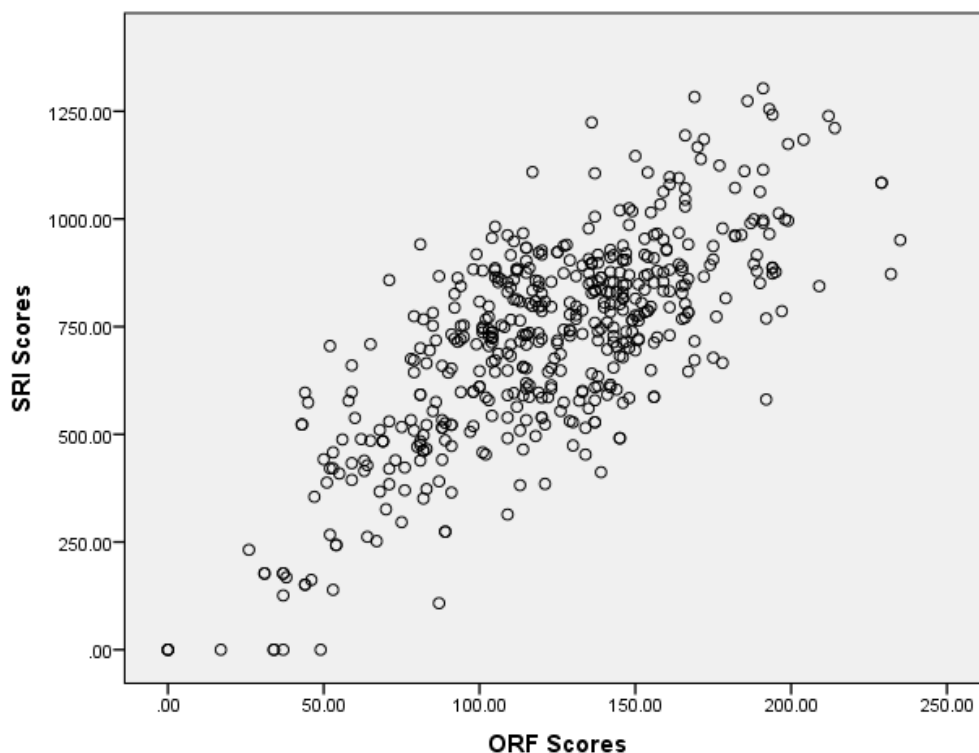


Figure 3. Scatter plot illustrating the association between the SRI scores and the ORF scores for Grade 5 participants.

Additional Analysis

The Kolmogorov-Smirnov normality test indicated that the SRI and ORF scores were not normally distributed for grades three and five, even after the outliers were removed. To check the sensitivity of the Pearson product moment correlation results to outliers as well as the failure of the normality assumptions, the non-parametric Spearman's rho statistic was employed. The Spearman's rank correlation test did not rely on the original score measurements. Instead, the scores were ranked and the correlation coefficient was computed based on the difference in the rankings of the pairs of SRI and ORF scores. The test is more robust, as extreme values have a small impact in the results, and the scores are not assumed to be normally distributed.

Null Hypothesis One

The non-parametric Spearman rank correlation was used to examine the first null

hypothesis. The analysis was conducted on the original 669 participants' data, without any of the outliers being removed. There was a strong positive correlation between the predictor variable ORF and the criterion variable SRI, $r_s = .722$, $n = 669$, $p = .000$. Increases in the predictor variable ORF were associated with increases in the criterion variable SRI for the third grade participants. The strength of the relationship as measured by Spearman's rho ($r_s = .722$) was slightly lower than the one strength of the relationship measured by the Pearson product moment correlation ($r = .752$). Overall, the results are in agreement with the original analysis, indicating the results were not sensitive to the normality assumptions violations.

Null Hypothesis Two

The non-parametric Spearman rank correlation was used to examine the second null hypothesis. The analysis was conducted on the original 512 participants' data, without any of the outliers being removed. There was a moderate positive correlation between the predictor variable ORF and the criterion variable SRI, $r_s = .650$, $n = 512$, $p = .000$. Increases in the predictor variable ORF were associated with increases in the criterion variable SRI for the fourth grade participants. The strength of the relationship as measured by Spearman's rho ($r_s = .650$) was slightly lower than the one strength of the relationship measured by the Pearson product moment correlation ($r = .693$). Overall, the results are in agreement with the original analysis, indicating the results were not sensitive to the normality assumptions violations.

Null Hypothesis Three

The non-parametric Spearman rank correlation was used to examine the second null hypothesis. The analysis was conducted on the original 499 participants' data, without any of the outliers being removed. There was a moderate positive correlation between the predictor variable ORF and the criterion variable SRI, $r_s = .667$, $n = 499$, $p = .000$. Increases in the predictor

variable ORF were associated with increases in the criterion variable SRI for the fifth grade participants. The strength of the relationship as measured by Spearman's rho ($r_s = .667$) was slightly lower than the one strength of the relationship measured by the Pearson product moment correlation ($r = .745$). Overall, the results are in agreement with the original analysis, indicating the results were not sensitive to the normality assumptions violations.

CHAPTER FIVE: CONCLUSIONS

Overview

This study addressed a gap in the literature by determining the strength of the relationship between reading fluency and reading comprehension among upper elementary school students using a continuous measure (Lexile) as the measurement of reading comprehension. This study aligned with the results of previous research in showing a strong, positive relationship between reading fluency and reading comprehension among third, fourth, and fifth grade students. The implications of this study impact teachers, schools, and school districts focusing on early literacy.

Discussion

The purpose of this quantitative, correlational study was to address a gap in the literature by examining the relationship of reading fluency, the predictor variable, and reading comprehension, the criterion variable, among third, fourth, and fifth grade students from a rural, Title 1 school district in southwest Georgia. This study included a review of current literature regarding reading fluency and reading comprehension. However, the use of Lexile as the measure for reading comprehension has not been included in the correlational study between reading fluency and reading comprehension. If a strong, positive relationship can be established between reading fluency and reading comprehension while using current instruments for both measures, the schools can justify spending valuable instructional time on reading fluency.

The first research question asked if a relationship exists between a third grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory. The results from this research question aligned with prior research on reading fluency

and reading comprehension. The results revealed a strong positive relationship exists between reading fluency and reading comprehension among third grade students. As a student's reading fluency score increases, his or her reading comprehension score also increases. Likewise, when a student's reading fluency score decreases, his or her reading comprehension score also decreases.

The second research question asked if a relationship exists between a fourth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory. The results from this research question also aligned with prior research on reading fluency and reading comprehension. The results revealed a moderately positive relationship exists between reading fluency and reading comprehension among third grade students. As a student's reading fluency score increases, his or her reading comprehension score also increases. Likewise, when a student's reading fluency score decreases, his or her reading comprehension score also decreases.

The final research question asked if a relationship exists between a fifth grade student's oral reading fluency score, as measured by the Dynamic Indicators of Basic Early Literacy Skills, and his or her reading comprehension score, as measured by the Scholastic Reading Inventory. The results from this research question also aligned with prior research on reading fluency and reading comprehension. The results revealed a strong positive relationship exists between reading fluency and reading comprehension among third grade students. As a student's reading fluency score increases, his or her reading comprehension score also increase. Likewise, when a student's reading fluency score decreases, his or her reading comprehension score also decreases.

The results from this study support previous findings from past research in that a strong positive relationship exists between reading fluency and reading comprehension even with the inclusion of Lexile as the measure for reading comprehension (Fountas & Pinnell, 2012; Kim et al., 2014; Munger et al., 2014; Paleologos & Brabham, 2011; Solari, 2014; Walpole & McKenna, 2011). The results also continue to support the information processing theory. The information processing theory reveals a person's brain is only able to process a certain amount of information at one time. The information processing theory is confirmed in this research study because students with higher reading fluency and automaticity have more brain capacity to devote to reading comprehension. The results of this study confirm this theory and its application to the relationship between reading fluency and reading comprehension.

The results from this study are consistent with previous literature. The inclusion of Lexile as the measure for reading comprehension did not diminish the relationship between reading fluency and reading comprehension. These results are also consistent with current educational observations. As students build their reading fluency, they are able to successfully read the words on the page. This skill is a necessity for reading comprehension. Students must be able to correctly get the words off of the page before they can even begin to comprehend the meaning behind the words.

It is important to note that while a positive relationship exists between reading fluency and reading comprehension among third, fourth, and fifth grade students, reading fluency does not cause reading comprehension. Likewise, reading comprehension does not cause reading fluency. It is important to remember; the two measures are completely independent of each other. Students can have a high reading fluency score but be unable to comprehend grade-level texts.

However, it is much rarer for students to have a high reading comprehension score with a low reading fluency score.

As school districts weigh the costs of spending instructional time teaching reading fluency to students in elementary school, these results reinforce the need for reading fluency instruction to occur in the classroom. If teachers can see an increase in reading fluency scores over the course of the school year, they can count on seeing an increase in students' reading comprehension scores as the year progresses. As students are better able to read and comprehend grade level texts, they are in a better position to find success on standardized testing each year.

Implications

The implications of this study are critical for current educators. The outcome of this research could impact curriculum and scheduling decisions of school systems currently weighing the importance of devoting valuable instructional time to teach these skills, as teachers and administrators will have evidence of the benefits of these instruments. While numerous studies on the relationship of reading fluency and reading comprehension have been conducted, none have used Lexile as the measure for reading comprehension (Fountas & Pinnell, 2012; Kim et al., 2014; Munger et al., 2014; Paleologos & Brabham, 2011; Solari, 2014; Walpole & McKenna, 2011). This study fills a gap in the literature by using SRI as the instrument for reading comprehension.

Lexile is an important measure that is calculated and used in the state of Georgia as one indicator to evaluate the effectiveness of schools on the College and Career Readiness Performance Index (CCRPI). The CCRPI is the instrument used to measure the effectiveness of schools in Georgia. Schools that struggle to keep a high CCRPI score, risk state takeover. By

including Lexile levels as two of the 11 indicators for elementary schools on the CCRPI rating system, the Department of Education places an extremely high value on Lexile levels. The attention to this measure must not be overlooked inside the classroom. With the inclusion of Lexile as two indicators on the CCRPI, schools must take action to provide academic support for their students regarding increasing reading comprehension scores. With the results of this study, schools can safely invest time in teaching reading fluency and trust students' reading comprehension scores will also increase.

As reading fluency and reading comprehension have been integrated into modern elementary classrooms, teachers are having to carefully plan lessons to ensure they are pushing students to reach higher levels of fluency and comprehension while still providing daily instruction on state-mandated standards. If elementary school students' reading deficits can be quickly and properly identified in the primary grades of kindergarten through first grade, schools stand a chance of keeping these students enrolled in school and out of special education services. Also, by teaching reading fluency and reading comprehension in elementary school, school systems should see a decrease in the number of high school dropouts.

Limitations

The first limitation to the study was the participants were all from one school district in South Georgia. Therefore, the results cannot be generalized to represent students from other geographical areas. Also, since the school district is a Title 1 school system, the results cannot be generalized to represent students from more professional homes. The participants in this study were intentionally selected to fill a gap in the literature. As a result, the findings may demonstrate cultural and socioeconomic bias.

A second limitation was the inclusion of all students in the sample size regardless of their score. The inclusion of the extreme scores, specifically on the low side, of the SRI instrument, caused the normality assumptions to not be tenable. This is because the SRI instrument revealed a score of zero for students scoring significantly below grade level. This results in more extreme outliers in the data set.

Recommendations for Future Research

Recommendations for further research were derived from the limitations of this study. Future studies replicating the methods and analysis of this study are evident for several reasons. While the sample size was adequate for the purpose of this study, a multi-system or broader base of students should be used. The sample size should be expanded to include students not in a Title 1 school district. This would provide a wider base of participants and greatly increase the generalizability of the results of this study and future studies.

A second recommendation for future research aligns with the need to increase the likelihood of the reading comprehension measure passing normality assumptions. Further research is needed using Lexile as the measure for reading comprehension to broaden the generalization of this study. However, future researchers using SRI as the instrument to measure Lexile, should consider removing scores of BR to prevent the failing of the normality assumptions needed for Pearson's r .

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Appendix A

Request for Permission to Collect Data

To: [REDACTED]

From: Josh Purvis

Date: September 28, 2016

RE: Dissertation Data Collection

[REDACTED],

I am currently pursuing a doctorate in education (Ed.D.) through Liberty University in Lynchburg, Virginia. I am in the dissertation proposal phase for a study investigating the relationship between reading fluency and reading comprehension. As a requirement of this process, I must provide proof of permission to collect data from the targeted institution prior to petitioning the IRB at Liberty University. This permission must be in writing on institutional letterhead. I, therefore, respectfully request permission to access archived student data for students in third, fourth, and fifth grade from this past May. Specifically, I am requesting to analyze students DIBELS and SRI scores.

I appreciate your consideration of this matter. If there are any further questions or needs for clarification, please do not hesitate to contact me. I look forward to hearing from you.

Sincerely,

Josh Purvis

Appendix B

Permission to Collect Data

Letterhead removed to maintain anonymity

September 29, 2016

Mr. Josh Purvis, Principal

[REDACTED]

Josh,

Per your written request, I am granting permission for you to access and/or obtain archived student data, specifically DIBELS and SRI scores for students in third, fourth, and fifth grades from May 2016. It is my understanding that you intend to use this information in your dissertation in pursuit of your doctorate in education through Liberty University.

I wish for you the best outcome in earning this degree.

Respectfully,

[REDACTED]

[REDACTED]

Appendix C

Liberty University IRB Exemption/Approval

LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

October 14, 2016

Josh Purvis

IRB Exemption 2670.101416: The Relationship between Reading Fluency and Lexile Measures

Dear Josh Purvis,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under exemption category 46.101(b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:101(b):

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a change in protocol form or a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

