ORAL READING FLUENCY SCORES AS AN INDICATOR OF READING COMPREHENSION IN TITLE I SCHOOLS

by

Carrie Barr Mott

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

This study investigated the relationship between second grade students' oral reading fluency scores as an indicator of reading comprehension achievement. A correlational design was used with a sample of 302 students from three South Carolina Title I schools. The students' oral reading fluency (DORF) and overall, informational, and literary comprehension scores (MAP) were recorded. The researcher completed three bivariate linear regression analyses to determine if overall, informational, and literary comprehension could be predicted by students' oral reading fluency rates. The researcher found that that there is a significant predictive relationship between the predictor and criterion variables. The statistical method used concluded a predicative relationship between oral reading fluency and overall reading comprehension, informational comprehension, and literary comprehension ($p. < .001$). This research adds to the body of knowledge in the field by focusing on students in a Title I setting. In addition, it also shows the variability for each of the three criterion variables. More research needs to be done to investigate what other factors account for the remaining percentage of variability in predicting comprehension outcomes in addition to fluency. In addition, focusing on a different sample population such as special education students would also be beneficial.

Keywords: oral reading fluency, comprehension, literary, informational, vocabulary, predictive validity, high stakes testing, socioeconomic status

Dedication

I dedicate this dissertation to my parents, Peter and Carol Barr. Without your gleaming example, I never would have had the chance to see the benefits of true work and dedication. They worked to provide and raise a family when times were not always simple. Even when things may have been hard for them, our family never felt a want or need for anything. They illustrated an effortless work ethic that has helped me in every challenge I have faced. I thank you both for making me into the strong, dedicated, faith based woman that I am today. I love you both.

I also wish to dedicate this dissertation to my husband Cameron and my daughter Olivia. I hope through this process which has encompassed much of Olivia's life thus far, that she can see the loving support her father has extended so that I could spend endless nights typing, reading, and highlighting as he took on the demands of our family. I also hope Olivia sees in me the importance of following through on my goals and having the strength to complete something at times when doubt found me. I love and admire you both.

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"Consider him who endured such opposition from sinners, so that you will not grow weary and lose heart," ~Hebrews 12:3

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Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

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Rasch Unit Scale (RIT Scale)

Socioeconomic Status (SES)

CHAPTER ONE: INTRODUCTION

Overview

Chapter One will orient the reader to the need for this study on the correlation of reading fluency and comprehension. It discusses research behind literacy instruction and the problem of fluency scores used as sole predictors of education. Finally, this Chapter will surmise by noting specific research questions to be addressed in the study, as well as defined terms frequently used throughout Chapter one.

Background

Causarano (2015) notes, in today's educational system, teachers are responsible for preparing future leaders to be successful in future global employment where strong literacy skills are crucial. According to Baroody and Diamond (2012), reading is an essential element that often predict one's ability to be a functional member of society later in life. If a student was unable to read in the early years of elementary school, and then continued to struggle, it could lead to the student not graduating from high school. Often even if a struggling reader did graduate and continued on to higher education, that student often would not finish their collegiate degree. This inability to read can also inhibit a student's ability to function in society. According to Lundberg, Larsman, and Strid (2010), "Poor development of reading skills is one of the most serious issues in current education," (p. 305). Reading is one of the fundamental aspects of education that crosses all disciplinary boundaries. With the discipline of literacy rooted in so many other core fundamental areas, a deficit in the area of literacy can affect many other areas, and lead towards further deficits later in life. In their study, McIlraith, Catts, Hogan, and Restrepo (2016) found, assessments with students as young as kindergarten and first grade can predict reading problems and other issues later in school and in life. With reading being required

to maintain most jobs within a community, a struggling reader who progressed through school and remained a struggling reader could possibly have a hard time being successful in a career path later in life.

In addition, the long-term, dire consequences of illiteracy had prompted researchers to determine when literacy instruction begins and what factors affects the foundations of literacy. Froiland, Powell, Diamond, and Son (2013), researched the development of literacy in a child, within their home environment from birth. Froiland et al. (2013) found that children from lower socioeconomic status (SES) homes have significantly less access to formal vocabulary and print, than children who are born into families with a higher SES. From birth to 4 years old, children from low SES households have had access to over 30 million fewer words than their peers born into more affluent homes, due to lack of print in their homes (Colker, 2014). The deficit in words grew more significant in the life of the child when exposure to rich vocabulary in print, such as magazines, newspapers, and books, yearly did not occur. Protopapas, Sideridis, Mouzaki, and Simos (2011), pointed out that this lack of access to rich vocabulary in print that children from low SES homes experience as opposed to their more affluent peers is an example of The Matthew Effect. In research by Duff, Tomblin, and Catts, (2015), they note that the Matthew Effect is the belief that the rich continue to get richer where the poor continue to get poorer. Children born into disadvantaged households have less access to print, which leads to less access to vocabulary, which negatively affects their reading ability.

Also, Protopapas et al. (2011) observed that children from low SES homes left the classroom to go to another room for reading intervention, with the intention of improving their literacy skills. While these poor readers made some gains in the intervention, the classroom teacher continued to teach the students who remained in the classroom who made greater reading

strides than the intervention group. When the intervention students returned to the classroom the previous gap in reading ability that existed had widened. The intervention students had made modest reading gains while the better readers made larger strides in reading. Thus the gap widened. The Matthew effect was in play for these children.

Early reading research focused on two areas of interest: the process of reading and reading instruction. Venesky (1984) found that many studies noted educators did little to change reading instruction. Venesky (1984) stated, "Basic research on reading processes occupies the most visible and prestigious position among the strands, but has influenced reading practice, the least" (p. 3). Research studies explained the processes of literacy but did not translate into practical application to improve literacy in classrooms for students.

Continued research by Venesky (1984) also traced the history of literacy research and found, in the early 1800s, in addition to the focus being on the process versus the instruction, there was much emphasis placed on the overall cognitive processes developed in reading. Early research done in psychology labs placed emphasis on the speed and accuracy of a participant's ability to recall visual items (fluency). From there, research in literacy surrounded itself with one's ability to read based on their role in society. For instance, it did not matter if a homemaker could read a, *Farmer's Almanac,* to help her husband with the farming. However, if she could not make heads or tails of a recipe or a list to help the family run, as her role dictates, society would then deem her illiterate, and the reverse would be true for her husband.

As history progressed, educators and researchers also recognized and valued the physical attributes behind reading such as lip movement and eye tracking. Throughout this time, researchers put little to no focus on research with regard to comprehension being a factor in literacy. In the 1930s through the 1960s, researchers based gaps on a lack of prior knowledge

and memory from prior experiences rather than noting a gap in comprehension. Current research continues to build on the philosophy behind the need for quick recall of letters and symbols in order for reading to be successful. Not only do letters need to be recalled with quick and rapid succession, but also connected to the sound they represent in the hopes that those sounds could be blended together in mere milliseconds to formulate words, (Murray, Munger, & Hiebert, 2014).

In more recent history, with the entrance of high stakes testing, it has only come into light in the early 2000s, the need for students to be able to comprehend what they are reading is critical. The ability to comprehend is necessary in all academic disciplines. Thus, a student who cannot read and comprehend is not a successful reader, (Hunley, Davies, & Miller, 2013). In addition, according to Promplun (2009), as more research in the field of literacy was conducted, there was more of a push for the studies to be reliable and valid to aid in creating a more rich base of research, in the hopes of beginning to affect instruction, which is a vast change from the research of Venesky.

According to Wanzek et al. (2010), by 2006 all public schools nationwide were to have some sort of accountability for reading measures. This extended not only into measures of reading but into also other disciplines as well. As this high stakes testing came into the forefront, it became apparent that if a child has issues reading, they might also have difficulty reading and understanding terms in other core areas such as math, science, history, and social studies. The need to be able to read in each content area became a concern as it became evident that to be successful in any content area in secondary school, a student must be able to read and comprehend at a fluent level.

Evidence of this carry over into the results of poor literacy comprehension can be illustrated in Christle and Yell's (2008) investigation of literacy levels of prisoners. They found that the number of illiterate prisoners was disproportionately large. Christle and Yell (2008) concluded that prisons are landing zones for students who make their way through school without the necessary foundation in literacy. These two studies by Christle and Yell (2008) and Wanzek et al. (2010) combine to illustrate how literacy deficits have profound and detrimental consequences over the course of a lifetime. According to Froiland et al., (2013) not only can low literacy rates affect the individual student, but also society as a whole as many of those students who are critically low are not able to maintain the basic literacy skills to graduate high school and often are unable to hold jobs in the community. Considering the consequences for an individual and the community, it is imperative that educators determined the appropriate reading intervention for each child, at the right time to produce the greatest literacy gains.

Theoretical Framework

Several reading theories link fluency towards reading successes later in life. This belief stems from early studies reported by Venesky (1984), in which, Cattell used fluency to predict reading success. The Prefetti verbal efficiency theory (Perfetti, 2007) stated that there is a link between alphabetic principle and reading proficiency. He further stated that fluency predicts reading success. According to Perfetti (2007), this theory is the belief that there is a link between alphabetic principle and its predictive ability towards reading proficiency. Goldberg and Lederberg (2014) define alphabetic principle as the ability of a person to recognize the link between sounds and the letter that represents those sounds. Perfetti (2007) surmised that a reader's ability to fluently link sounds to letters (alphabetic principle) would also aid in quick decoding of unknown words based on predictive relationships. Beck, Perfetti, and McKeown

(1982) note that there is a link between recalling phonetic patterns in sounds that make up words and building to comprehend their meaning. This is a fundamental link to comprehension and fluency.

Another theory is the theory of automatic information process in reading. The theory of automatic information process in reading is the belief that the removal of attention from decoding becomes the key that allows more of the attention placed on comprehension, (Fein et al. 2010). Overall, both theories work in tandem to support the belief that if one can create automaticity with regard to alphabetic principle and decoding, then attention can be placed on understanding what is read, so the ability of a student to read fluently can directly relate to their ability to understand.

In many schools today, students who come from low SES homes enter school with a vocabulary deficit that causes these students to start their journey to full literacy behind the starting place of their higher SES peers. Heppt, Haag, Bohme, and Stanat (2014) note, this gap continues to grow and by the time these students reach third grade, they risk never meeting the reading expectations of their peers according to Schechter, Macaruso, Kazakoff, and Brooke (2015). In addition, they are students who cannot rely on fluent decoding alone as their only means for quick word retrieval and have limited success in the area of comprehension. By researching to gain a stronger understanding of the predictive relationship and the research behind fluency and comprehension, educators can begin to create new interventions designed to meet the needs of students and create readers that are more successful.

Overall, literacy skills and the ability to read can have a lasting effect on students and on their success later in life as the skills that exist in literacy impact other disciplines. According to Heppt et al., (2014), the deficit in vocabulary and access to print begins at birth, resulting in low

SES children entering school with skills behind those of their more fortunate peers. According to Schechter et al., (2015), as students enter school and begin to be identified as having reading deficits they are often placed into intervention groups. However, if the intervention being provided does not meet the child's true need, there is still a divide and obvious disconnect that can grow deeper as each school year progresses.

Problem Statement

Studies have investigated the need to identify weaknesses in comprehension (Fien et al, 2010; Ding, Liu, 2014; Baroody & Diamond, 2012). Studies have also investigated the connection between fluent reading and the ability to understand what was read through comprehension (Pey, Min, & Wah, 2014; Wanzek, et al, 2010; Paleologos & Brabham, 2011). Several studies refer to the need for additional studies to be completed in this area as more research is needed to be able to make direct connections between the predictability of fluency rates on comprehension success (Paleologos & Brabham, 2011; Riedel & Samuels, 2008; Ding & Liu, 2014). In their research, Kim, Petscher, and Foorman (2015) assessed students' reading ability using a Maze assessment in which students are given a literary passage and throughout the passage the students are given three options for words. The goal is for the student to choose the correct word that maintains comprehension throughout the story. Kim et.al., (2015) found a connection between a student's fluency rate and comprehension success on their given Maze comprehension assessment. Kim et al. (2015) suggest utilizing participants from the same school district that are products of the same curriculum. In addition, they also noted that future studies should be completed and replicated with students from populations that are more diverse and that more specifically the need to complete the study with students from higher poverty areas.

In further research, the research team of Piper, Schroeder, and Trudell (2015) examined the relationship between oral reading fluency and comprehension with students in Kenya. One of their findings at the conclusion of their study was that while there was some predictability factor between oral reading fluency and overall comprehension, there was no examination of the predictive relationship between oral reading fluency and vocabulary. Piper et al. (2015) called for a focused examination of the role of vocabulary comprehension and reading fluency. Due to this gap in the literature, not only will oral reading fluency scores be compared to overall comprehension success, but also to specific informational, literary, and vocabulary strands. By examining if a predictability relationship exists between each of these subsets of comprehension, the researcher examines the relationship at a more specific and exact level. The problem is, while acknowledging these two gaps in literature along with the societal and historical need for more reliable research in the literacy field to add to the existing body of knowledge, more research is needed to explore the relationship between oral reading fluency scores and comprehension scores within higher poverty areas and at a deeper level to determine if a predictable relationship does exist between oral reading fluency and comprehension of literary and informative texts.

Purpose Statement

The purpose of this quantitative correlational research design study is to determine if a second grade student's reading comprehension score can be determined by their oral reading fluency rate. The predictor variable is the oral reading fluency scores on the Dynamic Indicator of Basic Early Literacy Skills Assessment (DIBELS) and the criterion variable is the overall reading comprehension scores, literary comprehension scores, and informational comprehension scores, scores attained on the Measures of Academic Progress Reading Assessment. The

Measures of Academic Progress Reading Assessment (MAP) gives individual scores for literary comprehension as well as informational comprehension. Watson and Liam (2014) define literary comprehension as the understanding of those pieces of literature that are plays, poems, literary non-fiction, and all fictional genres. Watkins and Liang (2014) also define informational comprehension the understanding of an expository, informational, or non-narrative text. The intended population of this study is second grade students who attend Title I schools in South Carolina. By taking existing research comparing the use of fluency rates to predict comprehension success in schools from high socioeconomic homes and currently working with a population that extends into the lower socioeconomic rates that exist in Title I schools, the research intends to add more research with an expanded group of participants.

Significance of the Study

The study is significant in that it will add to the literature by investigating the link between oral reading fluency and reading comprehension in the areas of overall comprehension, literary comprehension, and informational comprehension.

According to research conducted by the Council on Early Childhood (2014), 34 percent of entering kindergarten students are without the necessary basic literacy skills needed to learn to read. Reading is a skill that is necessary in all areas of life, especially in a school setting. Literacy skills affect all other academic areas, as well as put to the test in a reading classroom. Baroody & Diamond (2012), note in their study that often reading fluency leads to success in other areas as well. Froiland et al., (2013) noted that developing strong early literacy skills as a student begins school, leads to greater academic success, such as higher high school graduation rates and a greater likelihood of completing a higher education degree.

Perfetti (2007) notes, the Perfetti verbal efficiency theory notes that there is a strong connection between alphabetic principle/phonological awareness and reading acquisition. The significance of this study is to determine if a predictive relationship exists between reading fluency and comprehension, as many schools place students in intervention programs based on fluency deficits.

Walczyk, Tcholakian, Igou, and Dixon (2014) note that many studies conducted research to determine the intervention method in which comprehension would flourish the most. It was viewed that phonological development was a skill acquired over time and that once this skill is secure, to build comprehension, a student did not need direct instruction, but rather silent reading as often as possible. This initial research also links to Perfetti's verbal efficiency theory in that as long as the phonological piece is stable, comprehension will come in time as well as progress naturally. However, Walczyk, et.al, (2014) noted that in fact, that even though educators utilized silent reading as a strong method of acquiring comprehension techniques, is not the answer. In order to build comprehension strategies, students must be engaged in systematic direct instruction that is separate from reading fluently. While the National Center for Educational Statistics (2013) notes, 65 percent of the nation's fourth grade students read at or below a basic reading level, however the intervention measures for Kindergarten through third grade classrooms are fluency based rather than based on remedial direct instruction on informative and literary comprehension. As educators, we must notice the need for change, and implement direct instruction intervention at both the fluency and comprehension levels to assist in creating stronger readers.

Research Questions

RQ1: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and overall reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ2: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ3: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

Definitions

1. *Alphabetic Principle*- Mastering the link between letters (graphemes) and sounds (phonemes), (Goldberg & Lederberg, 2014).
2. *Automaticity*- To perform an act effortlessly and quickly with little to no conscious awareness, (Fien, et al., 2010).
3. *Comprehension*- The learner's ability to gather meaning from text, (Huang, 2013).
4. *Fluency*- The reader's ability to read quickly and accurately with intonation, (Huang, 2013).
5. *Informational Text*- Informational, expository, or non-narrative text, (Watkins & Liang, 2014).

6. *Literary Text*- Literature examples that are plays, poems, non-fiction, and all fictional examples, (Watson & Liam, 2014).
7. *Morphological Awareness*-The awareness of phonemes to link to meaning. For instance, linking music and musician to help understand a word, (Wolter & Green, 2013).
8. *Oral Reading Fluency* – A rate of reading determined by the number of words a child reads per minute on grade level passages of connected text (Kim, Petscher, Schatschneider, Foorman, 2010).
9. *Perfetti verbal efficiency theory*- A theory established by Perfetti that concluded a direct link between alphabetic principle and overall reading proficiency (Perfetti, 2007).
10. *Phonemic Awareness*-The awareness and ability to manipulate and hear sounds, (Huang, 2013).
11. *Phonics*-Teaching the link between letters and their sounds, (Huang, 2013).
12. *Theory of automatic information process in reading*- A theory in which if one is able to fluently decode words,

    then the mind is free to work on other elements of reading such as comprehension, (LaBerge, D., Samuels, S.J, 1974).
13. *Vocabulary*- The understanding of words and their meanings, (Huang, 2013).

CHAPTER TWO: LITERATURE REVIEW

Overview

Chapter two begins with the theoretical framework and examine the link between the Perfetti verbal efficiency theory and the theory of automatic information process in reading. The chapter then presents related literature by giving a background on the historical framework of literacy, fluency, and comprehension. In addition, the five essential elements of reading instruction as well as the view of reading as a successful predictor is included. Chapter two then presents the connection between fluency and comprehension and the relationship cognitive flexibility plays. The elements of comprehension divides into an understanding of literary text and informative texts that are observable in classrooms. The review continues through the introduction of potential societal affects such as socioeconomically status. Finally, the focus shifts to current trends in reading through the core areas and new literary interventions to add to the understanding of literacy as a whole.

Introduction

According to Aldridge (2005), the National Reading Panel created a report that identified the five components of reading instruction that are shown to have the most effect on overall reading understanding and progression. These five components are as follows: phonemic awareness, phonics, vocabulary, fluency, and reading comprehension. In order for a student to be a successful reader, they must be successful at each of the five components of literacy. If a child was unsuccessful at phonics or fluency, then the prediction would be that the child would also be unsuccessful at the other components with all five components being necessary for reading achievement. With the addition of high stakes testing in recent years, an increase in the focus towards reading instruction and when would be a good time to intervene has come to the

forefront of discussion. Educators struggle with the timing of the introduction of an intervention for a student and identifying which targeted intervention is needed. There are several questions that educators are researching to discover the best mode in which to help the most struggling reader.

Froiland et al., (2013), conducted a study to focus more on the effects of outside societal elements on reading success in children. The researchers revealed how early elements surrounding sound literacy instruction can have an effect on a child. To do this, they went into homes of students from lower socioeconomic households and students from mid to upper level socioeconomic households. Throughout their study, students from mid to upper level socioeconomic households had higher rates of reading to their newborn children and thus exposing them to print both verbally and visually than the children from lower socioeconomic households. On average, parents of students from lower socioeconomic households exposed their children to over 30 million fewer words in various types of print, than those children from mid to upper level socioeconomic households. With a gap in print that large, they summarized that, the time to intervene needs to be earlier rather than later. Another finding from this study that warrants mentioning was that while reading to a child helped to gain exposure to such a large number of words, a student's access to print also helped to build a known set of over 30 million words that these children had been exposed to in contrast to their counterparts who were not read to or provided rich print environments. Such types of print include, but are not limited to, picture books, newspapers, comic books, magazines, signs, and even directions on packaging. Both groups of students will walk into preschool classrooms at the age of four, but with a very different set of exposure from birth to four years old, which creates an achievement gap in vocabulary before students enter school.

Clearfield and Niman found discrepancies of students based on development even in the infancy age (2012). In their study, they found that infants from higher poverty homes had difficulties in the ability to move cognitively from focusing on one task to another, as well as reaction time and replication. Within their study Clearfield and Niman defined replication as, "a tendency to repeat strategies," (pg. 29) that appear during learning as a child grows from infancy through adulthood. If these difficulties and achievement gaps exist at infancy, and continue to widen, by the time a student enters pre-school or Kindergarten this gap is significantly larger than their peers who are not from poverty-stricken homes. This leads to a point that Protopapas et al., (2011), made in their study that those students who have a strong hold on literacy skills and maintain an on-grade level expectation can continue to grow in their skills at a natural level with continued exposure to print by their parents and teachers.

Teachers place students with reading deficits into intervention groups with children who have gaps or deficits in reading. These gaps or deficits may not be in the same one of the five areas of literacy. These students are in intervention groups often based on the phonetic principle of decoding words to fluently. While those students in intervention might make gains in groups of their reading peers, in comparison to their homeroom class, the deficit between fluency and comprehension still exists. Not only is the original 30-plus million word deficit from their peer possibly still there, but while the students were in their intervention classroom, the homeroom teacher was able to move forward with grade level instruction as the others were receiving their reading intervention. Protopapas et al., (2011) note, the Matthew Effect is visible with relation to those receiving intervention and those students in the homeroom classroom. The students who have a reading deficit and are placed into an intervention might grow their literacy skills, however if the instruction is not directly related to their deficit, this progress might be slow.

While these students are continuing to grow in intervention, the students in the general education class are also growing and learning. However, the students in the reading intervention class, while possibly progressing, it is not at an accelerated rate. This scenario is an example of the Matthew Effect, which in its essence states that the rich get richer while the poor get poorer. With regard to literacy development, a main point of the Matthew Effect is that successful readers continue to read more and become better readers, yet students that are not successful readers read less and do not continue to build their skills and continue to widen this defining gap. As students are removed from their homeroom to participate in an intervention, the students in the general education homeroom setting that are now more homogenous in nature are now able to access and work with print at a higher average level. Thus, the gap continues to grow and widen. Protopapas et al., (2011) found at the conclusion of their study that while a weaker Matthew Effect was recorded earlier than initially predicted, the students who did struggle the most with reading were not able to catch up in their reading comprehension ability suggesting that another type of intervention might be best suited to meet the needs of the students to help close the gap. Scott (2014) noted, if educators offered a variety of intervention opportunities to best meet the needs of the student, then the homogenous grouping would promote an atmosphere where acceleration would occur naturally, as occurred in the now homogeneous homeroom classroom during intervention time. Much like a generic homeroom classroom, the needs of the students' continuous evaluation should occur so that the homeroom teacher can alter her instruction meeting the needs of her students. The same is true of the intervention classroom. Much like there is no one size fits all model for instruction in the general education literacy classroom, the same is true of the intervention classroom. Either intervention classes need to offer a variety of instructional strategies to meet the individual needs, or the teacher needs to be

free to alter their curriculum to meet the individual needs of the students within their intervention classroom.

Theoretical Framework

The theoretical framework for this study is comprised of both the Perfetti verbal efficiency theory (Perfetti, 2007) and the theory of automatic information process in reading (LaBerge & Samuels, 1974). Both the Perfetti verbal efficiency theory and the theory of automatic information process in reading are observable hand in hand. Fluency based instruction is the practice of being able to blend initial sounds with automaticity. From there, fluency builds as students are able to quickly blend the onset and rimes with automaticity as well. The more automatically students are able to read and decode, the more attention can be shifted towards comprehension and the focus can shift almost without thought.

Perfetti Verbal Efficiency Theory

The Perfetti verbal efficiency theory (Perfetti, 2007) states that alphabetic principle leads to overall reading proficiency. Once a student fluently recognizes a sound, they then are able to decode words. Perfetti (2007) notes that comprehension is dependent on the ability to read words correctly. He further stated that when poor readers improved individual word reading speed, fluency and comprehension might also improve.

With so many early level interventions in the educational system, surrounding the area of fluency and the belief that it has predictive qualities on comprehension success, it warrants a further look into the theory behind this connection. Beck, et al., (1982) make note in their study of the Perfetti verbal efficiency theory as one of the beliefs supporting the thought process behind phonetic fluency lending itself toward predicting comprehension reading success as well. The basic structure is that once a student can fluently recognize a sound, then they move towards

fluent decoding of words. Perfetti (2007) noted in his study the belief that comprehension is dependent upon the ability to read words successfully. Perfetti (2007) noted, "Inefficient readers can indeed become more efficient and improving individual word reading speed may increase fluency and, under some circumstances, comprehension," (p. 358). In the study conducted by Fien, et al. (2010), the rationale for this focus on alphabetic principle follows three key assumptions. The assumptions are as follows: (a) the ability to recall words illustrated the ability to understand and perform phonological representations internally; (b) the more time that a student takes to recall a word, the weaker the connection that the student has with the word; (c) how fluently a student reads a word in isolation directly reflects the reading development. The overall assumption of the theory is that fluency equates to an illustration of quick processing of the reading at hand. Once that fluency is established, then the mind is free to link into a higher-level process such as comprehensive reading as the natural next step. Within this theory is the understanding and belief that the quicker a student is able to decode and read words within a text, the less focus needs to be centered towards that task and thus can be applied towards the comprehension task. Cervetti, Writing, Hwang (2016) noted this in their research that much like teaching comprehension, explicit teaching of fluency is equally as important in sections to help free processes to concentrate on comprehension. Once the practice of decoding and recalling high frequency words becomes more automatic, teachers and student place more emphasis on the reading to learn aspect of literacy in contrast to the learning to read aspect of literacy.

Theory of Automatic Information Process in Reading

The theory of automatic information process in reading connects to the belief that if one is fluent with recalling known words that would free up part of the brain within the reading process to focus on comprehension. LaBerge and Samuels (1974) take agreement in their study

that students need to read so fluently, in order to make the process of decoding automatic so that the focus could then shift solely towards comprehension.

Kuhn, Schwanenflugel, and Meisinger (2010) researched the current push towards utilizing fluency to determine reading success in later years. One of the overarching theoretical perspectives within their study was the theory of automatic information process in reading. The researchers determined that there are four properties that work together to define automaticity with relation to fluency in reading. The four properties are as follows: speed, effortlessness, autonomous automatic processes, and lack of conscious awareness. LaBerge and Samuels note that together, all four of these components work together to form a level of automaticity when reading so that it seems to happen automatically and without much focused thought, (1974). If a student is on the level of building automaticity, more attention needs to be placed on the task at hand to ensure accuracy is also in place. Another aspect of the theory of automatic information process in reading is that the brain is only capable of attending to one process at a time. If one is to incorporate more than one item at a time, then the brain must be able to do one of these things automatically so that other processes can be focused on the new task at hand (Pey et al., 2014).

Related Literature

According to the National Reading Panel (2000), five components of reading instruction show to have the most effect on overall reading comprehension and progression are as follows: phonemic awareness, phonics, vocabulary, fluency, and reading comprehension. In order for educators to consider students successful readers, they must be successful at each of the five components of literacy. If a child is unsuccessful at any one of the five components then that child has a deficit in reading, as all five components being under control by the student are necessary for reading achievement. As noted by Wanzek et al. (2010), all public schools

nationwide were to have accountability measures for reading instruction in core areas. With this addition of high stakes testing in recent years, educators place more emphasis on reading instruction. For students who struggle with reading, educators seek to identify the most effective interventions and determine the optimal timing for those interventions.

Historical Framework of Literacy

McCoy and Radar (2007) note, "In the one-room schoolhouse of a bygone era, the teacher scrambled to teach a variety of topics at many levels of difficulty to students of various ages, grade levels, and abilities," (pg. 1). The teacher would thus need to work with groups of students on a differentiated level to assure that the students were able to gain the skills necessary to grow and improve on their existing skills. Oral reading was encouraged as educators paired older students with younger students to work on their literacy skills (Scarnati & Kent, 1993). The one room schoolhouse model began to evolve as the world entered the industrial age within its history. As industrialization moved across the USA and more Americans went to work in factories, the organization of schools began to change. One-room schoolhouses consisted of groups of students separated into grades in different rooms. This was due to education becoming more accessible and to the need of literacy in education for student so they could receive the education necessary to be a part of the growing industrial workforce (Leland, 2002).

The expectation at this point in literary history was that a person was literate if they could comprehend literature pertinent to their career. Per Leland (2002), education became a point of continuous change as the shift to multiple grades began. Simultaneously, the change for students to remain with one teacher for one year and then move on to another classroom with another teacher the following year began (2002). The next large shift within the structure of schools was the movement to make schools as efficient as possible. It is at this point that educators assigned

specific smaller segments of time, breaking up overall learning sections. In comparison to the working world outside of the school setting, which was very factory and industrial in nature, the school day was now beginning to mimic this pattern. Again, the belief is that in order to prepare students for this type of workforce, replication is vital within the school system as well.

Specific literacy instruction also changed during this time. As schools became larger and students divided into classrooms by grade, the practice of reading aloud gave way to silent reading. As students read silently, teachers were unable to access fluency. Quizzes and questioning gave teachers some ability to assess comprehension, but fluency progress was too time-consuming to assess. Due to this shift, the emphasis and focus on oral reading fluency began to decline and take a backseat in the public school setting (Welsch, 2006). As teachers realized this deficit in literacy instruction, teachers developed techniques to provide opportunities for students to read aloud in order for teachers to assess fluency and address deficits.

Historical Framework of Fluency and Comprehension

Early in the history of literacy research from the 1800s into the early 1900s, there was a focus on identifying two trends in literacy development. Those two trends are, reading processes and reading instruction. Literacy research began initially in the psychology labs, as the initial belief was that early literacy skills centered on a memorization mental process. Venesky (1984), reported a study entitled, "The Duration of Mental Processes," conducted by psychologist Cattell in 1888. Cattell was a psychologist who extended fluency research beyond word recall to connected text. Alberto, Waugh, and Fredrick (2010) define connected text as multiple word phrases. Cattell concluded that the more access a person had to connected text, the more they could increase their fluency rates overall. Through his experimental study, participants were to read a letter on a wheel through a one-inch gap in an overlapping wheel. While participants

could recall the letters in fractions of seconds, Cattell increased the size of the gap, thus allowing the participant to be able to see the next letter in line. Once the participants could see five of the next letters, it began to have an adverse effect on fluency times. The reason for this is that there was an unseen limit as to how much the brain could remember and remain fluent in its processing. Cattell concluded that there is a limit to the fluent decoding of unconnected letters.

Cattell then continued into phase two of the study where participants were timed reading connected and unconnected texts. The connected words worked together to form a sentence, when the unconnected texts were simply unrelated words in isolation. Overall, the findings supported the first phase of the study in that participants had better fluency rates when the text was connected and forming a coherent comprehensive phrase. Using connected letters and texts, the human brain was able to create connections with regard to how words work together and was able to fill in gaps in missing letters in words and missing words in phrases that might exist. In addition, the more exposure the participants had with the expectations of the assessment, the more fluent they became in the assessment and were able to fill textual gaps without yet having to see the full words. However, as larger disconnected groups of letters and words appeared, the participants actually had lower fluency rates. At the point where more than one or two letters were missing, the participants had a harder time filling in the expectant gaps, as they became too large and left too many options for accurate predictions. This is one of the earliest illustrations of phonetic decoding fluency showing its limitations as a predictor of overall reading comprehension.

These types of studies continued into the early 1900s. From there, much of the research moved towards the physical attributes of reading. Venesky (1984) continued to note that much of the research during this time is on the physicality of reading. Such examples of studies

revolved around eye movement across text, speed of reading, and lip movement when reading silently. Overall, early research began to set the stage from the physical demands of reading into understanding what mental capabilities are need to read.

This type of research continued until the late 1950s when maintaining focus on understanding and building fluency began to shift towards understanding the theories behind comprehensive understanding of a text. Venesky (1984) notes, that while issues with comprehension may exist, it is due to rather larges gaps in fluent recall of vocabulary and articulation rather than comprehension gaps. At this point in the history of literacy, the research behind comprehension was just coming into the forefront, so initial studies found the errors in reading comprehension were due to gaps in vocabulary as the main catalyst in poor reading comprehension. They reasoned that if the vocabulary elements were strong, the fluency would be evident. This laid the groundwork for the discovery of the five elements of early reading instruction.

More recently, Murray et al., (2014) noted literacy is comprised of fluently reading whole words and whole texts to help build an able reader. This study considered the five components of reading (phonemic awareness, phonics, fluency, vocabulary, and comprehension). The findings suggest that the more fluently one can recall whole words with automaticity; the quicker they will be able to recall words within whole-connected texts. This study supports the importance of fluency in the task of reading.

Wolter and Green (2013) conducted a study to investigate the impact of fluency on overall reading success. Their link was to go beyond simple phonetic automaticity, but to have students gain control over morphological awareness. They define morphological awareness, as the notice that words are comprised of a morphemic structure that can be broken down to help

decode and understand how words relate and work together. Wolter and Green hypothesize morphological awareness will help to increase vocabulary acquisition, which will support comprehension skills. This study is one of the more recent studies that continues with the current trend of linking overall word fluency to comprehensive understanding of a given passage. While the research still refers to an overall belief in fluent recall of known parts, the link to the morphological connection between words illustrates another link between decoding and comprehension. Overall, throughout these moments in history from the early 1800s to 2010, much of the research has surrounded the need for increased fluency rates with connected texts, but limited direct mention of comprehension until recent articles.

The first mention in research with an indirect reference to comprehension was in the early 1900s. According to Venezky (1984), society labeled a person was unable to read and understand a piece of literature based on their job at hand, illiterate. If a man, whose profession is farming, cannot understand the almanac in order to make decisions for his craft of farming, society determined he was illiterate. However, if the person were to use the text to help them in their job, then they would need to understand the information in books pertaining to their job at hand.

As standardized testing became more prevalent in the early 2000s, more studies emerged with regard to comprehension development in early readers. Hunley et al., (2013) note in their study that due to the No Child Left Behind Act of 2001, all schools were now responsible for having a measure for reading, math, and other core subject areas. Accordingly, researchers began to question if the inability to comprehend standardized test questions would affect a student's ability to respond correctly to a test item. Hunley et al., (2013) noted, "Educators need tools to monitor student progress and make necessary instructional changes for students who are

not making sufficient progress or are at risk for not passing statewide achievement tests," (p. 1). Suddenly educators and researchers began to see the epidemic, that reading was more than fluent decoding, that had been sitting on the horizon for so long and not yet brought into the forefront. Overall, comprehension, while not viewed as a passive process, is dependent upon several skills coming together. Comprehension, being the summation of several skills together, calls upon the cognitive flexibility of the brain to be able to move from one task to another while still connecting back to the original. While fluency may be one of those components, along with: semantic skills, memory processing skills, phonological skills, vocabulary, grammatical structure, prior knowledge, and verbal ability, is not a singular factor, but rather possibly part of a whole group of components that work together, thus encouraging thought that comprehension is no longer a passive process, but rather an intricate intentional and active process (Bellinger and DiPerna, 2011).

Five Essential Elements of Reading

The act of reading is a complicated process, which combines five essential elements for success in the task. The National Reading Panel (2000), lists the five essential elements as phonemic awareness, phonics, vocabulary, fluency, and comprehension. If there is a weakness in any of the five listed areas, then there is an overall weakness in the reading process as a whole. Suggate (2016) records that as we identify areas of weaknesses, we need to move past making changes in short term, but truly identify in which of the five areas the deficit occurs and make long-term changes through quickly administered interventions.

According to Suggate (2016), once an overall weakness is determined, it generally fits into one of two categories. The first category being a weakness in phonemic awareness, phonics, and fluency or a weakness in comprehension and vocabulary. Often a weakness in phonemic

awareness, phonics, and fluency exists between Kindergarten and first grade, while weakness in comprehension and vocabulary exists in students who are in second to fifth grade. The division of the five elements into two groups is due to how the groups relate when processing reading. Godoy, Pinheiro, and Citoler (2017) note that phonemic awareness is the understanding that words are made up of a given set of sounds without the initial visual aid of the grapheme or letter. Phonemic awareness is a focus on the identification of the sound, or phoneme. In order for reading to occur, a student must move quickly from identifying phonemes to connecting those phonemes to the graphemes in which they represent which brings in the phonetic connection. This initial recognition and connection that each grapheme has a corresponding phoneme and that those phonemes blended quickly is the basis of the alphabetic principle and early reading. This added automaticity and speed is the fluency connection and is at the very core to this early from of reading. As students are able to decode with automaticity, then they are able to adhere to the other two essential elements of literacy development, vocabulary and comprehension.

Laufer, and Aviad-Levitzky (2017) note that an interdependent relationship occurs between comprehension and understanding vocabulary. Vocabulary falls into two categories, comprehensive and sight. Sight vocabulary are words that are common in text, but often cannot be decoded, as they are words that are of uncommon phonetic structures. Comprehensive vocabulary is vocabulary that exists within the text and requires schema, as well as a basic comprehension and understanding of the surrounding text to determine meaning. Both types of vocabulary aid in comprehending a given text. Even though the five elements work together in separate ways, they all work together to ultimately drive comprehension.

According to the National Institute for Literacy (2007) there is an epidemic at hand with 8.7 million adolescents leaving elementary school and entering middle and junior high schools who still struggle with reading and writing literacy deficits. The National Institute for Literacy continues to examine, the growing need for teacher training to reach low achieving students, on how to instruct students and build foundations in all five areas of literacy. This is due to the high levels of fluency intervention available, and low level of early literacy skills interventions in the four other areas of comprehension, phonetic instruction, phonemic awareness and vocabulary instruction. The National Institute for Literacy (2007), noted, "Little research has been done to develop instructional programs that would help children with language-learning disabilities. These students have a need to acquire strategies as well as knowledge of words," (p. 11).

Pey et al. (2014) noted in their study of the connection between oral reading fluency and comprehension in English as a secondary language student, that educators should note that four skills cannot be ignored in order to focus on one skill and expect to achieve the goal of fluent and comprehensive reading. A student with a reading deficit in one area, such as comprehension, is often only offered a reading intervention in one of the other 4 areas such as fluency, which results in the areas of need being neglected.

A balance of early literacy instruction in all five components is necessary to meet the needs of struggling readers, (Pey et al., 2014). Students also need to be able to connect the five elements in order for fluent and comprehensive reading to occur. If the provided instruction is to address only one of the five components, then a deficit exists in the other four areas. A low achieving first grade student provided phonemic awareness and phonics instruction at the Kindergarten level who shows improvement in these areas, will be able to move up to a higher reading level due to an improved ability to decode. However, an assessment of the student's

comprehension skills might reveal a deficit in another area, such as reading comprehension. That is because their comprehension understanding is still at the Kindergarten level. So, the teacher will need to drop the reading levels back to this area and begin to work on comprehension while still prompting for phonemic awareness and phonetic skills so that they are not lost. According to Pey et al. (2014) that is because their comprehension understanding is still at the Kindergarten level. Teachers should focus on all five elements of literacy in order for student to grow to become successful readers.

Lysaker and Hopper (2015), investigated a method for students to monitor their own reading. They state that students should crosscheck while reading to ensure proper decoding and comprehension. When crosschecking, the reader makes predictions and then checks the predictions to determine if they are phonetically and semantically appropriate. This crosschecking links the five elements of literacy.

The Impact of Poverty on Reading Success

Success in literacy can affect many aspects of life. Several studies determine to what extent a student's inability to read can affect them later in life. Baroody and Diamond (2012), researched early literacy beginning at the home to see the effect, if any, home life had on early literacy skills. They found that there was a direct relationship between early access to available print and early reading literacy skills.

Froiland et al., (2013), observed how early elements surrounding sound literacy instruction can have an effect on a child. The summation of the study noted that parents from higher income households were more likely to expose their children to print in a variety of ways and that students from low-socioeconomic households were exposed to over 30 million few

words in print. This variance in literacy development created due to exposure from birth to the age of four exists prior to formal education becoming a factor. .

Clearfield and Niman found that students that live in poverty stricken homes, enter their educational career with delays that are already observable (2012). They also found that living within certain levels of poverty could have negative effects on cognitive control. Children who grow up within poverty have weaker working memories and a lack of cognitive flexibility than their peers from higher socioeconomic homes. In addition to summarizing that students from lower socioeconomic homes have less reading decoding success than students from mid to upper socioeconomic status homes, they also found that early literacy skills directly relate to success in later school years. Students who had high levels of early literacy skills were more likely to be successful in school and go on to graduate with their peers.

They also found that these students are more likely to go on to pursue and are successful in completing a college level program. Clearfield and Niman also found that students who came from households without poverty, such as middle and high-income homes, had much stronger cognitive flexibility and also had much stronger working memories than students from homes of poverty (2012). Froiland et al., (2013) also had similar findings. Their team determined in a parallel study that low early literacy rates could lead to a high percentage of high school dropout rates for students in their longitudinal study. Thus, early intervention is essential to prepare students for success in high school that result in graduation.

Connection Between Fluency and Comprehension

Investigating the link between fluency and comprehension is a recent phenomenon. Since the National Reading Panel in 2001 identified the five components of reading (phonemic awareness, phonics, fluency, vocabulary, and comprehension), many school districts are using

fluency rates to determine success in comprehension scores within their district. Ding and Liu (2013) conducted a study to assess the ability of the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) to determine reading growth. Ding and Liu (2013) noted, "DIBELS is the worst thing for the teaching of reading, and DIBELS is not an adequate indicator of reading comprehension," (p. 12). They also noted that DIBELS contains subtests such as nonsense words and phoneme segmentation fluency that are isolated decoding measures, but in no way identify initial comprehension success. The overall summation was that DIBELS does well at what creators designed it to do, which is asses the fluency of the ability to decode words per minute. The reason this assessment was seen as not being successful is that all subtests measured the ability to decode, but there was no piece of the assessment that directly assessed the students' ability to comprehend, even though it was being used as a measure for both decoding and comprehension. While that is an important element in overall reading development, it is more an isolated component rather than a predictor variable. Riedel and Samuels (2007) attempted as well to determine a relation between the DIBELS assessment and reading comprehension. Their findings suggest that more conducting further research to determine the validity of using DIBELS as a measure of comprehension in necessary. They further stated that some students can read words fluently but do not comprehend what they have read. According to their high oral reading fluency score, they would not receive any intervention. In contrast, another student who is searching for meaning in the text might read more slowly and be penalized in his score. The determination would be that this student has a reading problem. For example, many school districts mandate students be placed in intervention groups based on district-mandated assessments. These assessments could be fluency or

comprehension based, and yet, a singular focus of fluency is the only intervention offered. The ignored element of comprehension that the child needs thus not addressed by the intervention.

Paleologos and Brabham, (2011) conducted a similar study that examined the correlation between oral reading fluency scores and comprehension success. However, these researchers uncovered a deficit in background vocabulary in students that explained their reading difficulties. Their results showed that poor background vocabulary interfered with phonetic decoding of words and comprehension of the passages. This was especially true for students from low SES households. They also found that the DIBELS oral reading fluency assessment did not identify which students would need comprehension intervention based on their oral reading fluency rates. Reading fluency alone was not a significant predictor of reading comprehension. Paleologos and Brabham suggested conducting further studies to determine to what extent reading fluency is able to predict reading comprehension success in a population comprised of sample participants from diverse socioeconomic backgrounds (2011). In addition, further research to determine the type of reading interventions that educators make available for the school district would be essential. Educators should be data driven to determine the overall connection and then create intervention groups to meet the needs of those students as their intervention may come from a variety prescribed programs.

Cognitive Flexibility

Cole, Duncan, and Blaye (2014) define cognitive flexibility as, "the ability to select adaptively among multiple representations of an object, perspectives, or strategies in order to adjust to the demands of a situation," (p. 1). The idea behind cognitive flexibility has to do with the ability to acquire new information and the need for the brain to be flexible in order to handle several different requirements at once to produce an end measure. Research in this area has

worked to show that elements such as reading acquisition relate to the level of flexibility within the brain. According to Cole et al. (2014) "cognitive flexibility is most often examined using task switching paradigms, measuring the ease of switching between different sets of sorting rules which reveal initial successes between the ages of 3 and 5 years," (pg. 1). This sorting continues to increase in capacity to help sort through the various dimensions that exist when switching between various tasks from the ages of 7-9 years. A study by Cartwright, Marshall, Dandy, and Isaac (2010) provided evidence examining cognitive flexibility, that flexibility in both reading and general knowledge increased from grade one to two. While there was an increase in reading ability in these students, they showed little to no increase in decoding ability. The belief is that as the brain continues to make connections and it becomes confident in being able to understand several models at once. As the brain becomes more confident and able to connect various components, a student becomes more successful reading student.

Kieffer, Vukovic, and Berry (2013) reported on a study utilizing the Wisconsin Card Sorting Test. The Wisconsin Card Sorting Test was an assessment that measured both word and letter identification of the students in which it was assessing. This study utilized this assessment with fourth grade students who were from low-income households and found higher achievement on the students' reading comprehension scores was highly due to the students' flexibility and not the controlled variables, which included speed, memory, language understanding, word identification, letter identification, or phonological awareness. Within the study, there was no predictive element observed as assessed in the Wisconsin Card Sorting Test, yet flexibility was determined to be a significant independent predictor.

Clearfield and Niman also examined the connection between learning and cognitive flexibility (2012). They examined the relationship between socioeconomic status and cognitive

flexibility as early as infancy. Not only do students from a lower socioeconomic home have significant effect on the access to readily available print, in time, there is a decrease in cognitive flexibility as well (Ransdell, 2012; Fan, 2012; Froiland et al., 2013). Clearfield and Niman (2012) found that poverty not only has a negative effect on cognitive function, but also students who live in homes with very high levels of poverty score lower with regard to cognitive flexibility. Children, who live in homes with less poverty, had stronger working memories and a higher level of functioning cognitive flexibility than their peers who lived in homes with higher rates of poverty (2012). In addition, students with deficits in cognitive flexibility often find the need to repeat strategies that have shown successful in the past. A student who lacks cognitive flexibility will utilize a skill they used previously. A student who has spent time in class working on phonetic skills in isolation, but has a difficult time transferring this knowledge when reading connected texts is already at a disadvantage. This inability to transfer knowledge from one task to another is also an illustration of a lack of cognitive flexibility. Students attempting to read a whole text passage, and are unsuccessful due to decoding issues, however are successful in decoding isolated words are not transferring knowledge and cross referencing when reading. The student is reverting to an area where they first experienced success in phonetic blending.

With this in mind, if a school bases their intervention programs on decoding or phonetic principles, then school systems force students who score poorly on the district reading assessment such as Measures of Academic Progress (MAP), or DIBELS, into an intervention that is decoding or phonetics based. However, if the students' issue is cognitive flexibility and they are reverting to phonetic skills because they have a deficit in their ability to cross check, they might be receiving an intervention for a skill of which they already have control. Instead, a students' cognitive flexibility could be the underlying issue but instead of teaching students how

to grow this skill, the school district reverts to phonetic instruction. This results in schools providing inappropriate and ineffective reading instruction.

Elements of Comprehension

Comprehension, like fluency, required the activation of multiple skills simultaneously. According to Bastug (2014), "the act of reading will be insufficient without comprehension," (p. 281). In his study, Bastug reports that complexity and type of text affect reading comprehension. Based on text structures, there are two overall types of texts that have varying skills necessary to comprehend. These two types are literary and informational. Bastug also found in his study that overall; students had an easier time and scored better on literary passages than informational (2014).

Literary Comprehension

Barth, Tolar, Fletcher, and Francis, (2013) stated that the type of text structure presented to a child influences the rate at which fluency is recorded. When assessing comprehension, teachers are monitoring multiple levels of development. The comprehension of a literary passage requires decoding skills as well as the ability to retrieve and make connections between the passage and the child's prior knowledge. Often literary texts, unlike informational texts, include vocabulary that is more readily available for a child to make connections (Barth et. al., 2013).

Barth et. al., found the following characteristics necessary to fluently read literary texts (2013). The initial characteristic being sight word reading. Sight word reading is defined by Torgesen (2002) is the ability to accurately read individual words in print. Sight word reading often involves the automatic recall of words that do not follow the traditional pattern within the English language. The second characteristic is phonological decoding. Phonological decoding

as defined by Brennan and Booth (2015) is the ability to read words based on the recall of known rimes. The third characteristic is verbal knowledge, defined by Barth et al. (2013) as reading for comprehension through understanding and vocabulary recall. It is through this bank of knowledge that students are able to make connections to gain meaning and aid in comprehension. The fourth and final characteristic is the student's ability to integrate all of the above characteristics (Barth et al., 2013). Students who are placed into reading interventions to increase phonetic decoding skills to help build automaticity in decoding to build fluency skills are working to meet several of the above characteristics to be successful in reading literary texts and thus might have more success than informational texts.

Informational Comprehension

Informational comprehension as defined by Watkins and Liang (2014) ability to comprehend literature that informational, expository, or non-narrative. Often these are also known as non-fictional texts. Fisher and Frey noticed in their study that many elementary aged students to do have adequate access to informational comprehension (2014). It was also found that while adequate access does not exist for most students, students need to know which resources they have to gain new understanding that can build their collection of prior knowledge. By doing this, the student is then creating more connections to help aid in comprehension of other texts (Fisher & Frey, 2014).

As noted earlier, a prominent theory of fluent reading is the Theory of automatic information process in reading. Rasinski, Rupley, Paige, and Nichols noted in their work on the relationship between fluency and comprehending informational text, that if students are not automatic in their recall of smaller sight words, this can impede their ability to break down words, which diminishes their ability to break down words. This then diminishes their ability to

fluently read and comprehend words often found in informational text (2016). Rasinski et al.. also noted that the student who receive phonetic instruction become adept at decoding but are unable to comprehend informational text. This is due to students relying on decoding but not understanding word parts when comprehension support does not exist in phonetics-center reading instruction. As a student grows older, the need to transition from decoding to word recognition and comprehension is difficult if there is not support in the transition. The unfamiliar vocabulary becomes an impediment to proper comprehension when reading informational text.

With regard to informational texts, it is often necessary for a student to have knowledge about a topic and the ability to access that knowledge prior to reading the text. Cervetti and Hiebert note in their study, those students with prior knowledge about a topic tend to misread words less often and that when they make an error; the error made still carries the overall understanding and meaning (2015). For example, students who have knowledge about a topic and access that knowledge prior to reading the informational article tend to make fewer accuracy errors. The meaning based errors that did occur did not deter from overall comprehensive understanding. Thus, while accuracy may not be perfect, comprehension is still intact. Therefore, a student might be a fluent reader, but if the comprehension element does not exist, then the reader will have a difficult time reading informational text fluently.

Knowledge of a topic is essential to avoid comprehension issues when reading an informational passage. The extension of comprehension exists because the student is able to understand and make connections to informational vocabulary within a given passage (Zhang & Lu, 2013). Zang and Lu noted that studies show a relationship between vocabulary knowledge and informational comprehension (2013). The deeper a student's vocabulary and prior

knowledge on a topic, the more connections that the student is able to make to help them comprehend a given passage.

Potential Societal Effects

Christle and Yell (2008) note that the link between low literacy and poor academic outcomes result in an overall lack of success in other areas of life. Christle and Yell (2008) investigated the relationship between literacy and incarceration. The researchers worked with a prison in hopes of preventing youth incarceration through reading interventions as prison youths who have deficits in reading are disproportionality represented in correctional institutions. Christle and Yell (2008), noted "the fact that youths who have deficits in reading are disproportionately represented in correctional institutions suggests that the juvenile justice systems have become the default system for many youths who have reading problems," (p. 148). As educators, effective interventions need to be put into place so that the legal and judicial system do not become the first intervention that one encounters. This is especially true as youth and young adults who are added to prison populations with the inability to read. The youth prison population that is unable to read, has the potential to continue to return to prison due to their inability to read and function as an adult in the workforce.

This continued struggle later in life as illustrated by the Matthew effect, illustrates that often the gap struggling readers possess, will continue to grow as the student moves into through their years in school. A student not reading on grade level by fourth grade is less likely to graduate high school than his on-level peers, which could also lead to the student dropping out early as well. In addition to dropping out of high school, poor literacy affects other areas of life. In order to hold a job, it is necessary to be able to read the directions left by an employer. Equally important is the ability to read street signs fluently, and emergency alerts. In addition to

reading and comprehending instructions, it is critical to be about to apply and infer meaning. If a person has the ability to read and decode the instructions to open a safe, but lacks the comprehension to follow the steps to lock it back in order to protect the items inside, he has missed the purpose of the safe (Froiland, et al., 2003; Baroody & Diamond, 2012).

Students who complete their educational experience, even those who slip through the cracks and are able to do so successfully, yet cannot read, are at a greater risk of falling into the trap of prison as an outlet often due to the lack of support or appropriate early reading intervention, Christle & Yell (2008). If a student cannot function within the classroom setting, then chances are they may not function well as members of the community where there is less focused and centered support for them. The key is early identification and intervention for these students within their first few years that they are in school if not before.

Socioeconomic Connection

Due to the connections among low literacy, dropout rates, and incarceration, research has examined the socioeconomic situation of poor readers. Froiland et al. (2013) found a difference in the access to print when comparing low-income homes to mid to upper socioeconomic households. Researchers such as Froiland et al., (2013) found that gaps, created at birth, between children born to parents from lower socioeconomic households and children born to parents who live in mid to upper socioeconomic households. Fan (2012) noted, "the findings of the study were that children from poor homes performed badly in school because their parents could not provide them with the required texts and other necessary facilities that fostered learning at home and school," (p. 99). The overall initial lack of access to print helps to create a gap before the student even enters the school's walls.

Ransdell (2012) researched lower socioeconomic households and found that the characteristic of poverty is one of the largest and most considerable risk factors that affect school performance. Students from lower socioeconomic households have a higher risk of having difficulty in acquiring academic skills in comparison to students form middle to upper socioeconomic households. These studies suggest that students who come from lower socioeconomic households come to school with an already existing deficit that requires intervention as soon as possible and could be a more effective predictor of reading comprehension success than fluency rates. Clearfield and Niman conducted a study in which they observed and worked with infants from high and low poverty based homes. The infants from the higher poverty homes had a much harder time with regard to cognitive flexibility, repetition, and modeling, (2012). It was evident, even from infancy, that children from the higher poverty homes reacted slower and had a larger gap with regard towards being able to build cognitive flexibility at the same rate as their peers who are not in lower income living situations. They noted that students who entered school with cognitive delays associated with belonging to a family within poverty, have delays that are readily observable from the point of pre-school and continue to increase as the child progresses through school (2012). The study observed a set of infants to report if socioeconomic status had an effect on the most basic of learning steps such as repetition, mockery, and response (2012). Again, children from lower socioeconomic homes had lower rates of repetition, mockery, and response due to lack of parental interaction.

Overall, in their study, Clearfield and Niman (2012), provided more evidence that coming from a lower socioeconomic household can have a lasting impact on a student from the earliest of years. Socioeconomic status could also prove to be a better source from which to pull

reading intervention groups than initial oral reading fluency rates in the youngest learners. Students from low socioeconomic households on average have much less access to print within their homes. Less access to print at such a young age, created a deficit in these populations of students. This gap that is created continued to grow until these students entered school at the age of five.

Venesky also noted that the limited accurate research existed and previous research ignored and not often change teaching practices. Many educators determined that veering away from current and common teaching practices was not necessary. Many instructors did not see the need to make shifts as literacy and illiteracy were not prevalent issues during early literacy movements. Even though basic research on the process behind reading was most prevalent, very few educators and literacy research utilized the information from these studies in altering literacy instruction to best meet the needs of the students at certain times in history. Early research in literacy practice did not include the differences between socioeconomic statuses.

Current Trends in Literacy

According to the U.S. Department of Education (2015), 14 percent of adults within the United States are illiterate. That translates to approximately 32 million adults are unable to read at a basic level; adults who do not have the literacy skills to fully function in our complex society to accomplish day-to-day tasks. To combat this problem, educators in early grades focus on literacy instruction. Students who have deficits in literacy can move through school for years without closing their literacy gap. According to Park and Kyei (2011), as time passes, the gap increases, and each year it becomes more difficult to correct. If the educators identify the literacy gap early in the student's educational career, then acceleration can be an element to strive for in the classroom. When acceleration occurs, a student can make strides larger than a

year's growth within the classroom. As educators reconstruct a student's literacy education, to help meet those needs, and acceleration occurs, it is then that students and teachers can witness real growth in closing the literacy achievement gap. The key idea however, is to identify the necessary intervention to meet the current need in the students.

The process of learning to read is one that varies according to the students observed. While some students seem to have no issues with literacy, decoding, or comprehension process, for others it is a difficult process. There are numerous reasons as to why a student might have difficulty with literacy. Cambourne notes, that one reason is that some students have simply been given negative examples of what early literacy looks like and what it means to cross-check as one is reading to help ensure that everything, looks right, sounds right, and makes sense. Some students also suffer because at home their parents are not literate and there is no one at home to read to them, and if they do try, they are not successful, (Cambourne, 2002).

As a transition to help teachers facilitate reading instruction within schools, a current trend is the use of literacy coaches in elementary and primary schools. As Beam, Williams, and Bridgman note, by creating a team between a literacy coach and the teachers at each grade level, the building of a positive relationship is the hope (2013). Within this relationship, the Literacy coach and classroom teacher can explore and brainstorm ways in which to improve literacy instruction within the classroom. Toll (2016) notes that the most effective literacy coaches embrace the creation of this relationship as it allows more than one person to brainstorm ideas to support the students as they develop literacy skills. It is also the literacy coach's responsibility to encourage change based on data driven decisions. Working together, the literacy coach and classroom teacher can share ideas and provide a positive and supportive learning environment. If students are not successful, then there is a team there to help catch problems and create new

ideas for those students. Park and Kyei (2011) note, from this current trend also comes the idea of differentiation within the reading classroom supported by a team that recognizes and identifies deficits.

Froiland, Powell, Diamond, and Son (2013) found that children from lower socioeconomic status (SES) homes have significantly less access to formal vocabulary and print, than children who are born into families with a higher SES. Students in Title I schools are culturally, linguistically, and academically diverse. Puzio, Newcomer, and Goff note that in order to meet such a variety of needs within Title I classrooms, teachers must differentiate their literacy instruction with items such as guided reading, instructional strategies, engagement, and literature circles, (2015).

When differentiating within the classroom, the classroom teacher breaks down their classroom into smaller groups of no more than six students who have a common need or set of strengths or weaknesses. According to Fitzgerald (2016), teachers are able to use anecdotal notes, assessment data, district level assessment data, and observations to group and regroup students based on need. This fluid grouping gives the teacher the freedom to focus on the direct needs of the students in addition to whole group literacy education. When the use of differentiation in literacy occurs, if a group has a deficit in phonemic awareness or phonics, then educators provide specific instruction within this area. In addition to this, if students are experiencing success within a differentiated literacy group, the teacher now has the ability to increase their level of instruction to meet higher needs that might be at the upper end of the students' grade level standards, or even move a step above into the next grade level's standards.

In addition, Hong, Corter, Hong, and Pelletier (2012) note that in addition to meeting individual needs of students, it also gives the teacher more time with lower-ability students. By

increasing the time spent teaching these lower achieving students, through purposeful and intentional grouping, the lower achieving students begin to pull forward and make gains. However, it is to be noted this could be due in fact to the actual extra minutes given to these students, as well as, or in spite of the homogenous grouping. The thought behind this current trend is that it gives the teachers the ability to meet the individual literacy needs of the students so that the teacher can work towards building successful habits in literacy instruction. As in early literary history, where society determined literacy based on a person's ability to read the necessary information to complete their job, literacy continued to encompass the ability to read required information for a job, or educational opportunity. In order to be literate, students must also become accustom to current trends.

Reading in Other Core Areas

With the increased use of high stakes testing, Hunley et al. (2013) sought to determine if standardized tests were measuring a student's reading ability instead of measuring the core subject the test claimed to examine, such as math or social sciences. Hunley et al. found most standardized assessments were written at such a high reading level that if a student was unable to decode or understand the vocabulary used in the assessment, then the student was not successful on the assessment. However, when read to students, they were able to answer the questions correctly. For instance, in order to do a word problem in a mathematics classroom, one needs to be able to read the word problem. The student must be able to read the problem and comprehend its meaning. The same is true for other disciplines such as science and social studies.

Wanzek et al., (2010) found that as federal accountability policy continued to increase, educator accountability began to rise. To address this, the school district within this study, began to create intervention programs to help their struggling learners beginning at the Kindergarten

grade level focus on reading. To determine which students would receive the intervention to help meet comprehension needs, educators used oral reading fluency scores. Wanzek, noted, "the measures of student progress (oral reading fluency) that are used to make instructional decisions throughout the grade levels must reliably inform expected student performance on outcome measures," (p. 68). These researchers found a correlation between students' fluency assessment scores and comprehension assessment scores. Students who scored poorly on one were likely to score poorly on the other. Wanzek et al, noted that these assessments were not timed and that further research is needed to examine student performance on timed tests.

Another important factor is the need for educators to observe and determine if the underlying cause of the gap in literacy success is due to lack of cognitive flexibility, phonetic or phonemic awareness gaps, or comprehension gaps and create an intervention to meet the corresponding needs. Hunley et al. (2013) overall findings supported intervening at an early age to address literacy gaps and to help students on high stakes testing in other disciplines such as math, science, and social studies.

It is critical for educators to match the student with the right intervention at the right time in their lives. Richards-Tutor, Baker, Gersten, Baker, and Smith (2015) noted, that the selection of an intervention simply cannot be a shot in the dark with existing programs, but rather needs to be systematically determined based on research and analysis. For the struggling reader, it is a necessity to determine the cause of the gap and how extensive the gap is for a student. Then, educators will need to create interventions to meet the precise needs of the student. Since literacy is the base of all other core areas, this type of intervention supports the student's learning across the academic spectrum. As long as standardized testing is a focus in math, science, and

social studies instruction, all students' ability to read the information as they learn depends on their ability to read and comprehend.

Literacy Interventions and the Matthew Effect

In the early elementary school years of Kindergarten through third grade, interventions for literacy are prevalent. Hilbert and Eis note, (2014) many interventions exist within school systems, however many are not created with all five elements of literacy in mind, but rather as a systematic linear process that builds, beginning with phonemic awareness, then onto phonetic instruction, then into fluency, vocabulary, and finally comprehension. Due to the nature of the small amount of time for intervention, the focus is not on all five areas of reading. Hilbert and Eis note that in classrooms where comprehension and vocabulary skills are not stressed, student growth is rarely observed. Often educators spend instructional time on isolated early reading skills, such as phonological development as a precursor to comprehensive development and not embed all elements. The concern with this type of intervention is that it does not provide the opportunity for students to fully develop their literacy skills. For students who might have difficulty in cognitive flexibility or comprehension, a phonetic-based intervention will not boost their abilities.

Clearfield and Niman found in their study, observable discrepancies in students even in the infancy stage, (2012). In their study, they found that infants from higher poverty homes had difficulties in the ability to move cognitively from focus on one task to another, as well as reaction time and replication or mimicry. If these difficulties and achievement gaps exist at infancy, and continue to widen, by the time, a student enters pre-school or Kindergarten this gap is significantly larger than their peers who are not from poverty-stricken homes.

Protopapas et al., (2011) found that those students who have a strong hold on literacy skills and maintain an on grade level achievement could continue to grow in their skills with continued exposure to print by their parents and teachers. The students that are often successful without the addition of reading intervention are show success in the core reading instruction within the general education homeroom. However, often students with reading deficits are placed into intervention groups with children who have gaps in reading, but the gaps may not be in the same one of the five areas of literacy. These students are in intervention groups often based on the phonetic principle of decoding words to build fluent automaticity. While those students in intervention might make gains in groups compiled of their reading peers, in comparison to their homeroom class, the gap between the two still exists. Not only is the original 30 plus million-word gap still there, but while the students were in their intervention classroom, the homeroom teacher was able to move forward with grade level instruction as the others were receiving their reading intervention. Thus, as Protopapas et al., (2011) note, the Matthew Effect is visible in relation to those receiving intervention and those students in the homeroom classroom. The students who came in with the reading deficit continue to decline because even though they are increasing in their reading skills, so are the homeroom students and often at an accelerated rate. The Matthew Effect of the rich getting richer and the poor getting poorer is illustrated this scenario. As students are removed from their homeroom to participate in an intervention, the students in the general education homeroom setting that are now more homogenous in nature are now able to access and work with print at a higher average level. Thus, the gap continues to grow and widen.

Protopapas et al., (2011) found at the conclusion of their study that while a weaker Matthew Effect was recorded than initially predicted, the students who did struggle the most

with reading were not able to catch up to their peers' reading comprehension ability suggesting that another type of intervention might be best suited to meet the needs of the students to help close the gap. If a variety of intervention opportunities were offered to best meet the needs of the student, then the homogenous grouping would promote an atmosphere where acceleration would occur naturally, as occurred in the now homogeneous homeroom classroom during intervention time. Regardless of the ability levels of the students in a classroom, the needs of the students should be continuously evaluated so that the instruction can be planned to meet their needs. Students all vary in their literacy instructional needs. Both the general education and the intervention classroom needs to offer differentiated instruction.

Duff, Tomblin, and Catts, (2015) found if educators do not take the time to systematically, analyze and focus on each child's needs, students with literacy deficits will fall further behind. A student who has a cognitive fluency issue or who is unable to comprehend, but can decode, will not find much help in being a part of a fluency based program. If a student has shown success in phonetic decoding, they will revert to or remain true to using that strategy to help them read. Due to a lack in cognitive flexibility, they are not as readily available to shift from one type of prompting, questioning, and thought as their peers who are able to readily access their ability to be more cognitively flexible. Since the English language contains phonetic patterns that do not follow a rule. These words can be used to determine a student's reading comprehension. To support students, balanced, differentiated literacy instruction coupled with effective cognitive flexibility will result in literacy gaps. By using these familiar strategies and not providing access to other strategies, the cognitive gap will continue to grow wider, as illustrated by the Matthew Effect.

Even when providing fluency interventions, students can continue to show deficits in two common areas. The first being accurate readers who are not fluent and the second being readers who have significant skills in quick decoding, but are not able to comprehend what is read, (Piper, Schroeder, and Trudell, 2015). Good, fluent readers need not only to be able to read quickly at no more than 140 words per minute, but they also must have strong accuracy scores. Accuracy scores refer to the number of words read correctly minus the number of words read incorrectly. According to the DIBELS oral reading fluency assessment, students should have accuracy scores around 97 percent by the end of the second-grade year. Any intervention that is in place would need to be able to address both of these issues together or separately. When a given reader is placed into an intervention, it is important that they are placed into the intervention that best meets the needs of their greatest deficit initially. For instance, if a student is decoding, but is still having a hard time comprehending what was read then it is important to place that student into an intervention classroom to best meet their individual needs and boost their literacy skills at hand.

Summary

According to Hurst and Pearman (2013), "A critical issue in education today is that many middle and high school students are not able to read on grade level," (p.225). To address this issue, researchers and educators seek to determine the most effective instrument to measure at what point a certain intervention should be offered to a student at the elementary level. Next, educators must determine what the intervention classes should look like and what element(s) of literacy development should be the focus of the intervention programs. Deficits can be in oral reading fluency, comprehension, low SES households, and cognitive flexibility. Several studies have examined various instruments to determine if there is a predictive correlation between oral

reading fluency and success on comprehension assessments (Ding & Liu 2014; Fein, et al. 2010; Hunley, Davies, & Miller 2013). The literature reports mixed results. Findings however, support previous research that students from low SES households start school with an existing gap in access to vocabulary and print that students who did not come from lower socioeconomic households did not enter school with (Froiland et al, 2013).

With the rise in emphasis on fluency-based measures, many school districts are turning towards using oral reading fluency rates as an indicator of poor reading achievement. Students are then being placed into interventions to increase their automaticity with regard to phonetic decoding, and then as they begin to meet their oral reading fluency goals, they show limited to no growth on their reading comprehension assessment. Research shows that this is an area that needs more attention to determine the root causes of literacy deficits.

CHAPTER THREE: METHODS

Overview

Chapter three, Methods, begins with a rationale for the design of this quantitative, correlational study of relationship of reading fluency and reading comprehension. Following the design, are the research questions and null hypotheses. Next, a description of the population and sample is provided along with a rationale of the sample size. A review of the instruments used is followed by the procedures and data analysis. The chapter will end with a summary.

Design

A quantitative correlational research design was used in this quantitative study. A correlational design was beneficial due to the researcher exploring relationships between variables, according to Gall, Gall, and Borg (2006). This was the appropriate analysis for this study as the strength of the relationship between the predictor variable, oral reading fluency scores, and the criterion variables, reading comprehension scores were being investigated. This study-mirrored work done by Hunley, Davies, and Miller in 2013 as they researched the predictive nature of oral reading fluency scores to predict comprehension achievement. The Hunley et al. (2013) study utilized this design. The purpose behind both studies was to identify the relationship between the predictor variable of oral reading fluency scores and the criterion variable of comprehension scores, as well as to examine if this relationship is predictive, with oral reading fluency scores as defined by Kim, et al. as being a rate of reading that is determined by the number of words a child reads per minute on grade level passages of connected text (2010), and comprehension defined by Huang as the learner's ability to gather meaning from text, (2011).

Research Questions

RQ1: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and overall reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ2: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ3: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

Null Hypothesis

$H_0$1: There is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and overall comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

$H_0$2: There is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

H_03: There is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

Participants and Setting

The participants for this quantitative correlational research design study were drawn from a convenience non-random sample of second grade students located in eastern South Carolina during the spring semester of the 2017-2018 school year. The school district is a low to middle income suburb on the eastern seaboard of South Carolina. The population from which this sample was drawn is comprised of greater than 63 percent of the students receiving free and reduced lunch. C.M. School District (pseudonym) is comprised of 27 elementary schools, 24 middle and high schools, 2 adult education centers, and 1 Kindergarten through twelfth grade therapeutic learning center programs. The school district serves the people in a 1,133 square mile area (U.S. Census Bureau, 2015). In addition, C.M. School District has a median income of $42,322 (U.S. Census Bureau, 2015). The sample was chosen from three Title I schools selected from 27 elementary schools within the district. The sample was chosen due to its Title I status. All three schools in the sample benefit from additional funding from the state and district to implement intervention programs in reading and math.

For this study, the number of participants sampled was 302 which exceeded the required minimum for medium effect size. According to Gall et al., (2007) 66 students is the required minimum for a medium effect size with a statistical power of 0.7 at the 0.05 alpha level. The sample came from three different Title I elementary schools within the district. Within each school, all of the second grade students were selected. The sample consists of 138 females, and

164 males. Of the sample, 100% (N=302) were between the ages of 7-9 years old. With regard to ethnicity, 53.1% or 161 individuals of the sample population was Caucasian, while 36.3% or 110 individuals were African American. 1% or 3 of the individuals were Asian, while the remaining 9.6% or 28 individuals were of other descent. 100% (N=302) of the students attend a Title I school which has over 68% of their students that qualify for free or reduced lunch.

Instrumentation

Two instruments were used to collect data for this study. The first was the Dynamic Indicator of Basic Early Literacy Skills Assessment (DIBELS) will measure oral reading fluency. The second instrument that was used is the Measures of Academic Progress Reading Assessment. This assessment, also referred to as, MAP, measures a students' comprehension ability not only with an overall score, and individual scores for literary comprehension, and informational comprehension.

Dynamic Indicator of Basic Early Literacy Skills Assessment

In this study, two instruments were used to collect data. The first is the Dynamic Indicator of Basic Early Literacy Skills Assessment. This assessment, also referred to as, DIBELS, measures a student's Oral Reading Fluency Score (ORF). The content for the instrument is a series of three grade level based reading fluency passages. Each passage includes a title and no illustration. All three passages vary in topic, but are at the same grade level. The assessment is issued three times per year to all Kindergarten through second grade students. The overall score includes how many words per minute the student reads as well as the accuracy rate at which the words were read.

The instrument was designed by S. L. Deno in the 1970s and 1980s at the University of Minnesota through the Institute for Research and Learning Disabilities. It was created to provide

an economical and efficient indicator of reading achievement.

The scales have a base score of zero with cut off scores assigned to each grade level. For second grade age range, the cut off scores are as follows: beginning of the year (54), middle of the year (74) and end of the year (87). The DIBELS instrument has been utilized in a variety of studies (Ding & Liu, 2014; Paleologos & Brabham, 2011; Riedel & Samuels, 2007) to rate oral reading fluency scores in a variety of ages. This instrument was found to have a concurrent validity of 0.80 and reliability of 0.92 (Paleologos & Brabham, 2011, Ding & Liu 2014, and Riedel & Samuels 2007).

The instrument was administered by the homeroom teacher in May of the 2017-2018 school year. In August of 2017, each homeroom teacher who will be administering the assessment will participate in training that will be provided by the school district during half day staff development opportunities at the district office by the same instructor. During the assessment, each student was provided with a letter size copy of the reading passage. The teacher will then access the assessment application by accessing the following website: www.mclasshome.com/assessments. The student then reads the first passage. As a student spends more than three seconds on a word, or incorrectly states the word, the teacher will tap the word on the application and it will count as incorrect. If the student self corrects, the teacher will tap the word again and it no longer counts as an error. The same procedure was repeated with the next two passages. The scores were computer scored and an overall composite score was given for each student.

Measures of Academic Progress Assessment

The second instrument utilized in this study was the Measures of Academic Progress Reading Assessment. This assessment, also referred to as, MAP, measures a student's

comprehension ability. The content for the instrument is a series of reading passages and questions surrounding literary text and informational text, to create an overall comprehension score. The instrument was designed by Olson, Ingebo, & Doherty in the early 2000s at the Northwest Evaluation Association in Oregon. It was created to provide an accurate measure for comprehension achievement. The scales were based on the Rasch Unit Scale (RIT Scale) which is an equal interval vertical scale. The scores gained on this assessment can be comparative not only at the local, but also national level.

The MAP Reading instrument has been utilized in a variety of studies (Wang, McCall, Jiao, & Harris 2013; January & Ardoin, 2015; Merino, & Beckman, 2010) to measure comprehension in students of a variety of ages. This instrument had a concurrent validity of 0.88, correlation validity of 0.84 and reliability of 0.94 with relation to overall RIT scores (January & Ardoin, 2015). With regard to subtests, literary comprehension scores had a reliability of 0.89 and informational comprehension scores had a reliability of 0.88 (Northwest Evaluation Association, 2011). In August of the 2017-2018 school year, each teacher attended district staff development sessions where teachers reviewed expectations and testing protocol for the administration of the MAP assessment for the school year. The homeroom teacher administered the instrument in March of the 2017-2018 school year. Each student accessed the 47 question assessment online through accessing the website: test.mapnwea.org. The assessment was not timed. The scores are computer generated and individual scores assigned for each of the following components: literary texts, informational texts, vocabulary comprehension, as well as an overall RIT score is given. The overall possible range for each subtest and overall composite score is from 140 to 300.

Procedures

Upon completion of required course work, the researcher gained approval from Liberty University IRB (see Appendix). The researcher met with the superintendent, principals, and instructional coaches at the three participating schools. The researcher then met with the second grade teams at each of the three schools to review testing protocol and answer any confusion as to the administration of the instruments. Upon the conclusion of the spring 2018 testing window, the researcher met with the C. M. County School District testing coordinator to gain access to the required data. The testing coordinator coded each of the students' MAP and DIBELS scores into an Excel database on a password-protected computer and give to the researcher. The data was also be backed up on an external hard drive that was locked in a secure filing cabinet. After the data was entered into SPSS and Excel, the data was screened, assumption testing completed, descriptive, correlational data analysis, and bivariate regression analysis was conducted using SPSS software.

Data Analysis

Bivariate regression analysis was used to analyze the data for this study. As noted by Warner (2013), "A bivariate regression analysis provides an equation that predicts raw scores on a quantitative Y variable from raw scores on an X variable," (p. 344). A bivariate regression analysis was appropriate for this study. Gall et al., (2007) state, "The bivariate regression correlational coefficient is a statistic that enables us to describe in mathematical terms the strength of the relationship between two variables" (p.137). This was the appropriate analysis for this study as the strength of the relationship between the predictor variable, oral reading fluency scores, and the criterion variables, overall reading comprehension scores, literary comprehension scores, and informational reading comprehension scores were investigated.

The analysis began with data screening to screen and look for unusual scores and inconsistencies using a box and whiskers plot to look for extreme outliers. Assumption testing was then conducted to check the assumptions of bivariate outliers, linearity, and bivariate normal distribution. These assumptions were assessed using a scatterplot with the predictor variables on the x-axis and the criterion variable on the y-axis. A classic "cigar shape" indicated the assumption of bivariate normal distribution is tenable (Warner, 2013).

A Bonferroni correction was applied to the alpha level since 3 analyses were run. Warner (2013) states that a Bonferroni procedure is appropriate to control the risk of type I error when multiple tests are run. The per-comparison alpha level (PC_α) = EW_α / k , where EW_α is the experiment-wise $\alpha = .05$, and k = number of tests (3). Therefore, for this study the alpha level is determined thus:

(PC_α) = .05 / 3

(PC_α) = .016 rounded to 2 significant figures, (PC_α) = .02

The researcher reported descriptive statistics (N, M, SD), degrees of freedom (df), R and R^2, *F* value, the significance levels (*p*), B, beta, and SE B, and the regression equation.

In conclusion, the researcher conducted a bivariate regression analysis to determine the overall strength of the predictor variable and criterion variables being investigated in null hypotheses 1-3. The researcher conducted all necessary assumption testing, as well as note descriptive statistics, and any additional statistical methods as needed.

CHAPTER FOUR: FINDINGS

Overview

Chapter Four includes the reporting of all data analysis with regard to this study as well as a review of both the research questions and hypotheses. The results include all descriptive statistics, assumption testing, statistical testing, Pearson Correlation and bivariate linear regression results.

Research Questions

RQ1: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and overall reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ2: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

RQ3: Is there a predictive relationship between oral reading fluency scores, as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary text reading comprehension achievement, as measured by the Measures of Academic Progress Reading Assessment, within a Title I school?

Null Hypotheses

$H_0$1: There is no statistically significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second

grade students and overall comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

$H_0$2: There is no statistically significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

$H_0$3: There is no statistically significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school.

Descriptive Statistics

The three schools selected were part of a convenience sample that was representative of a larger sample of students within Title I schools. The three schools that were part of the study due to their overall Title I status. All three schools reside in South Carolina and come from the same school district. The sample includes all second grade classes from all three local elementary schools. The sample population was 45.7% or 138 females, and males made up the remaining 54.3% or 164 individuals (N=302). 100%, or all 302 participants attended Title I schools. 53.1% or 161 individuals of the sample population was Caucasian, while 36.3% or 110 individuals were African American. 1% or 3 of the individuals were Asian, while the remaining 9.6% or 28 individuals were of other ethnicities.

The mean and standard deviation results for the predictor (oral reading fluency scores) and criterion variables (informational comprehension, literary comprehension, and overall comprehension scores) are listed below in Table 1: Descriptive Statistics for All Variables.

Table 1

Descriptive Statistics for All Variables

Variable	*N*	Mean	S.D.
Oral Reading Fluency Scores	302	98.66	30.61
Informational Comprehension.	302	190.54	14.98
Literary Comprehension	302	191.90	15.60
Overall Comprehension	302	190.43	13.31

Results

Data Screening

The data was checked for missing values and all were found to be complete. Box plots were run to check for extreme outliers. There were 10 individual scores that appeared as outliers on the box and whiskers plot. Upon review of the data, these points were not found to be extreme outliers and were retained. See below: Figure 1: Overall RIT Comprehension Box and Whiskers Outlier Plot, Figure 2: Informational Comprehension Box and Whiskers Outlier Plot, and Figure 3: Literary Comprehension Box and Whiskers Outlier Plot.

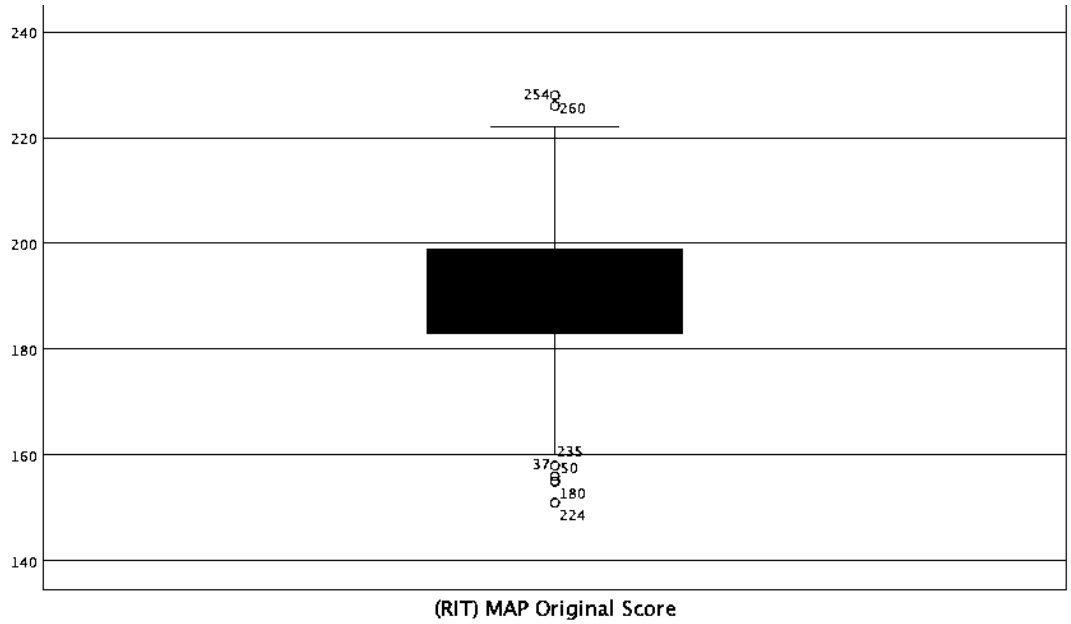

Figure 1. Overall RIT Comprehension Box and Whiskers Outlier Plot

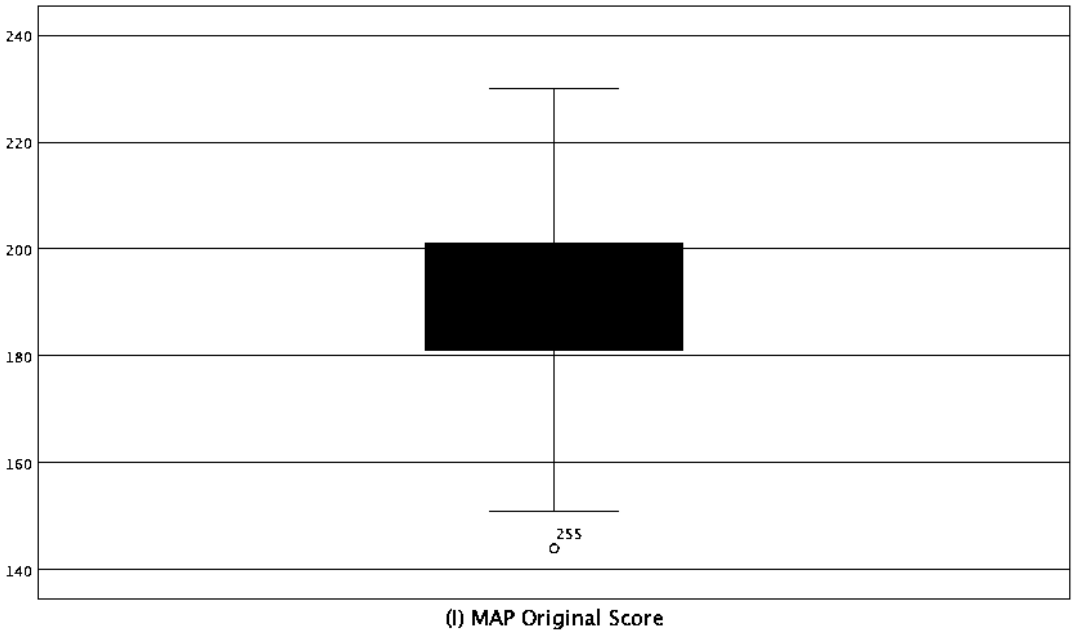

Figure 2. Informational Comprehension Box and Whiskers Outlier Plot

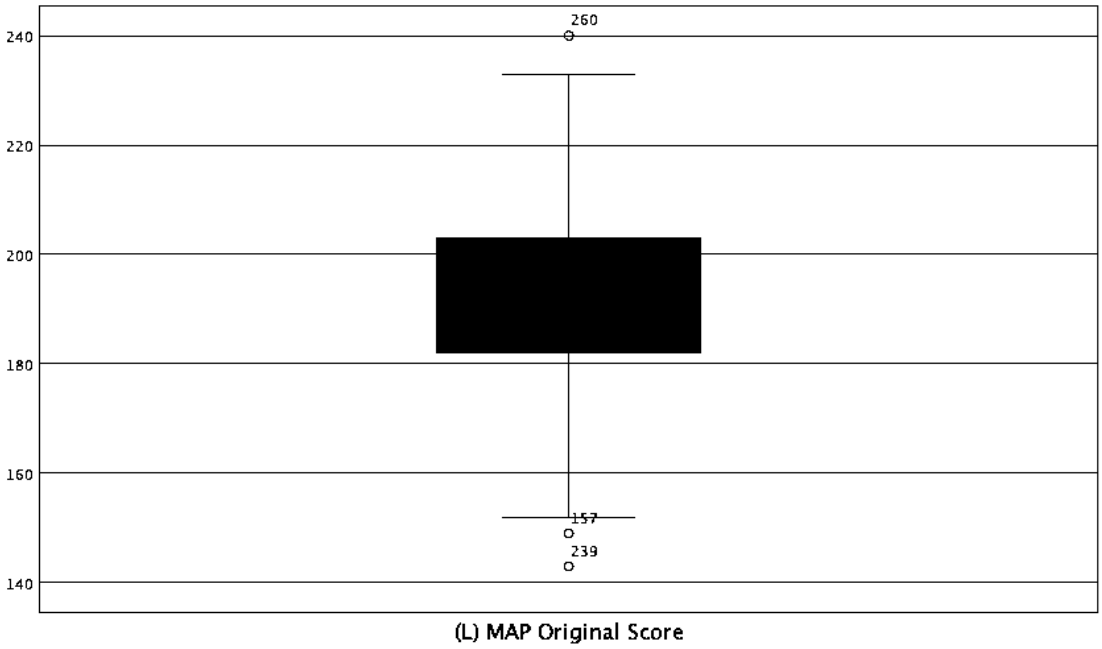

Figure 3. Literary Comprehension Box and Whiskers Outlier Plot

The researcher created scatterplots of placing the criterion variables on the x-axes and the predictor variable on the y-axis. Examination of the scatterplots show that the assumption of linearity and no bivariate outliers are tenable. In addition, the assumption of bivariate normal distribution was met as illustrated in the cigar shape data points observed in the scatterplot graphs listed in Figure 4: Overall Comprehension Scatterplot, Figure 5: Informational Comprehension Scatterplot, Figure 6: Literary Comprehension Scatterplot.

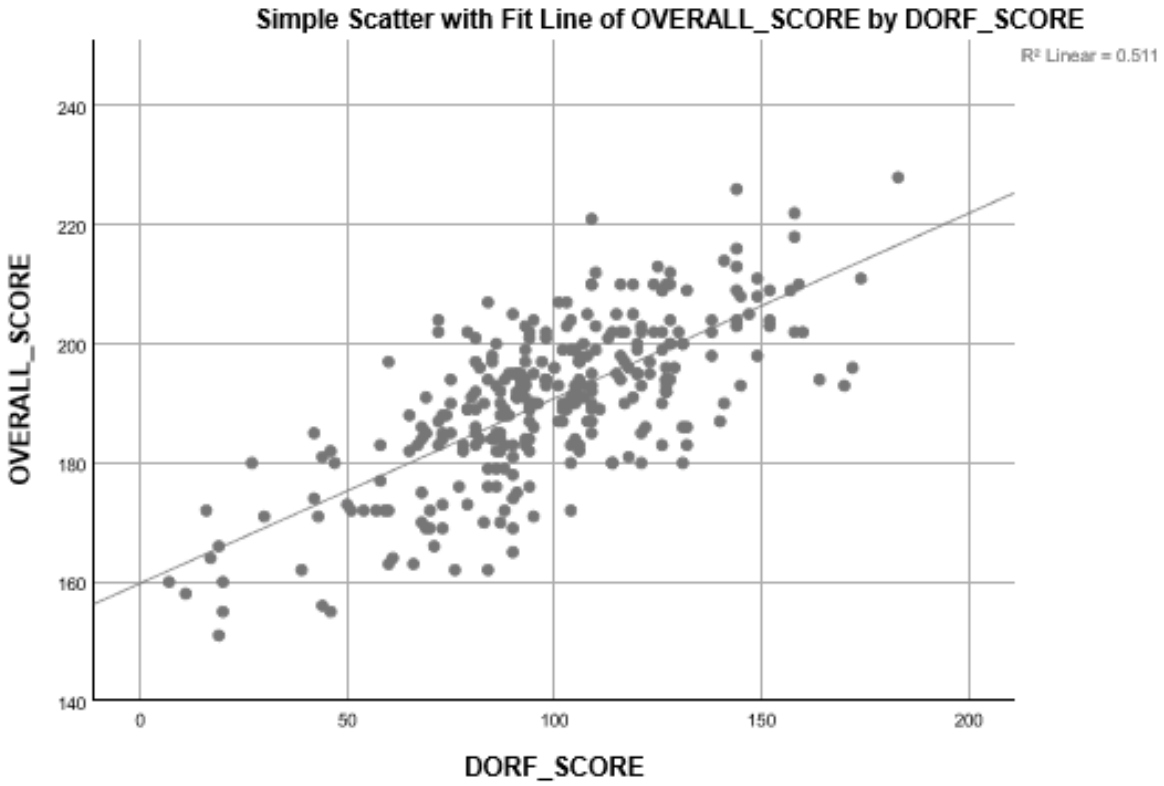

Figure 4. Overall Comprehension Scatterplot

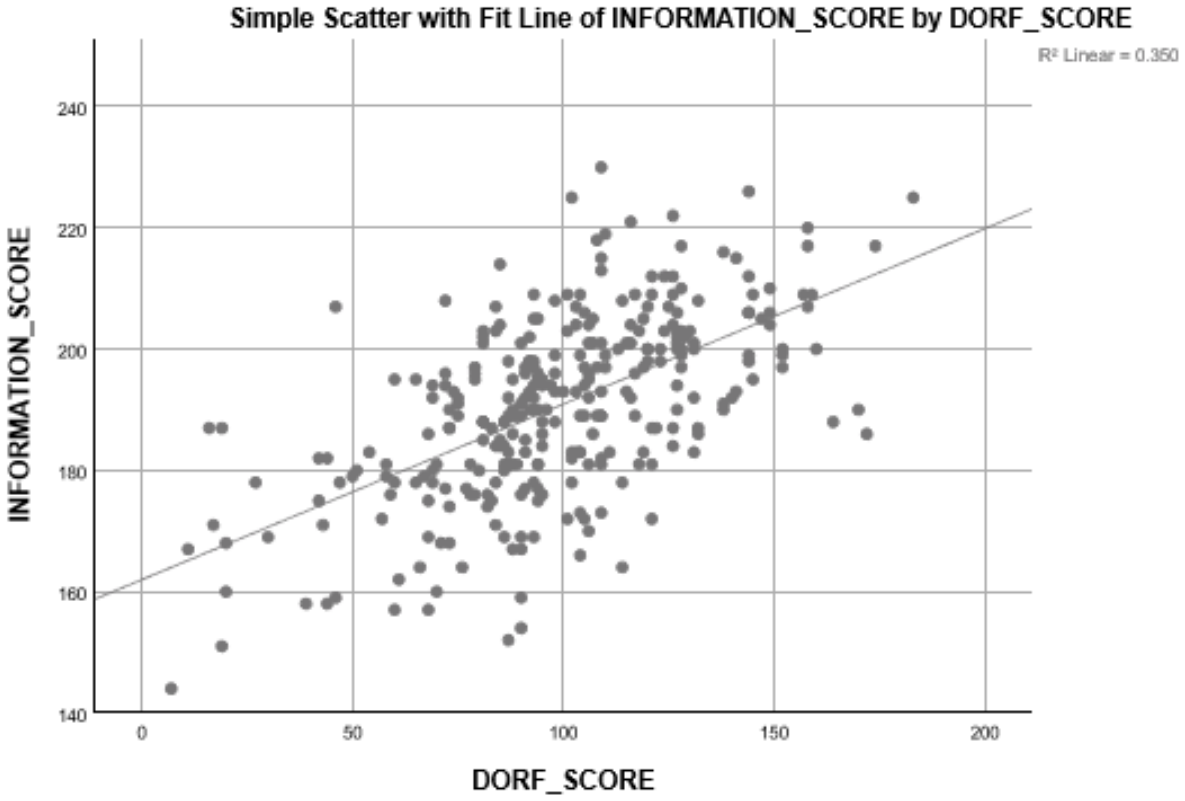

Figure 5. Informational Comprehension Scatterplot

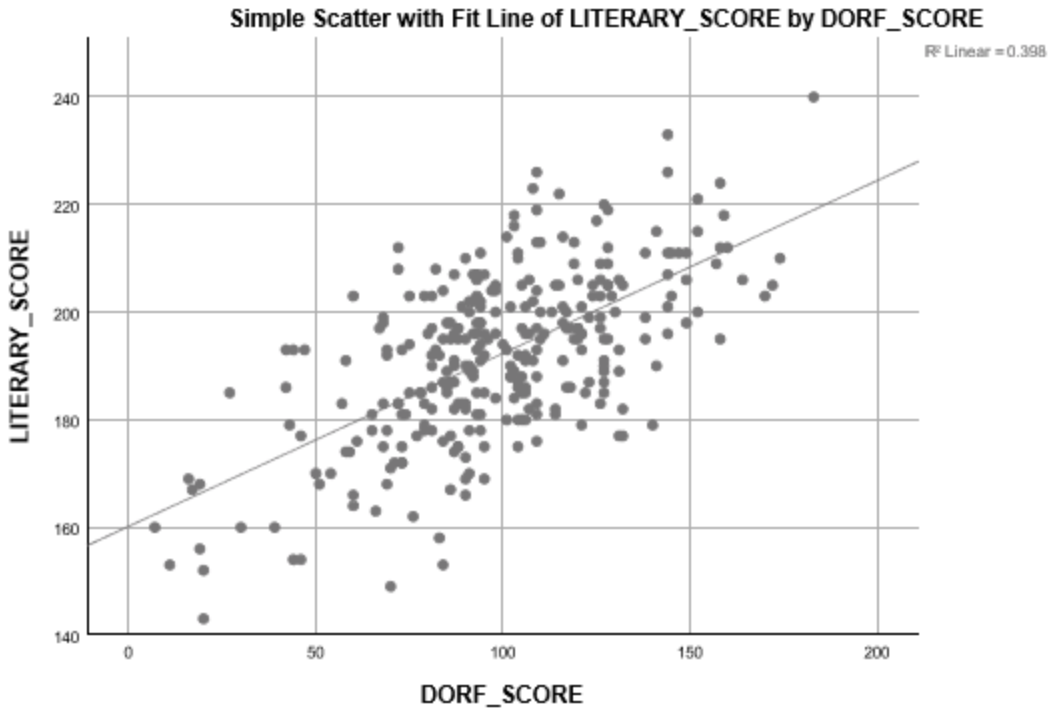

Figure 6. Literary Comprehension Scatterplot

Null Hypothesis One

Null Hypothesis One stated that there is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and overall comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school. For this hypothesis, a bivariate linear regression was calculated to predict overall comprehension achievement based on oral reading fluency scores. The regression equation for predicting overall comprehension score is, $Y = 0.31X_{\text{fluency score}} + 159.74$. The 95% confidence interval of this slope was 0.28 to 0.35. Table 2 provides a summary of the regression analysis for the variable predicting overall comprehensions scores. Accuracy in predicting comprehension, R =0.72, is moderate. A

student's fluency score accounted for 51.10% of the explained variability in overall reading comprehension (see Table 2).

Table 2

Coefficients

Model	*B*	*SE B*	β
1 (Constant)	159.74	1.81	
(DIBELS) Original Score	0.31	0.02	0.72

Note. [a] Dependent Variable: (RIT) MAP Original Scores
[b] $R^2 = 0.51$ ($p<.001$)

The results show significance evidence to reject the null hypothesis and conclude that fluency scores ($M = 98.66$, $SD = 30.61$) did significantly predict overall comprehension scores ($M = 190.43$, $SD = 13.314$), $F(1, 300) = 313.86$, $p < .001$ (see Table 3).

Table 3

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	27281.41	1	27281.41	313.86	.000[b]
Residual	26076.63	300	86.92		
Total	53358.04	301			

[a.] Dependent Variable: (RIT) MAP Original Score
Predictors (Constant), (DIBELS) Original Score
[b.] $p<.001$

Null Hypothesis Two

Null Hypothesis Two stated that there is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and informational comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school. For this hypothesis, a bivariate linear regression was also calculated to predict informational comprehension achievement based on oral reading fluency scores. The regression equation for predicting overall comprehension score is, Y = ..290$X_{\text{fluency score}}$ + 161.967. The 95% confidence interval of this slope was 0.245 to 0.334. Table 4 provides a summary of the regression analysis for the variable predicting informational comprehensions scores. Accuracy in predicting comprehension, R = .59, is moderate. A student's fluency score accounted for 35% of the explained variability in informational reading comprehension (see Table 4).

Table 4

Coefficients

Model	*B*	*SE B*	β
1 (Constant)	161.97	2.35	
(DIBELS) Original Score	0.30	0.02	0.59

Note. [a] Dependent Variable: Informational MAP Comprehension Score
[b] R^2 = 0.35 (p<.001)

The results show significance evidence to reject the null hypothesis and conclude that fluency scores (*M* = 98.66, *SD* = 30.61) did significantly predict informational comprehension scores (*M* = 190.54, *SD* = 14.98), *F*(1, 300) = 161.516, *p* < 001 (see Table 5).

Table 5

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23646.376	1	23646.376	161.516	.000[b]
	Residual	43920.723	300	146.402		
	Total	67567.099	301			

[a.] Dependent Variable: Informational MAP Comprehension Score
Predictors (Constant), (DIBELS) Original Score
[b.] $p<.001$

Null Hypothesis Three

Null Hypothesis Three stated that there here is no significant predictive relationship between fluency rates as measured by the Dynamic Indicator of Basic Early Literacy Skills Assessment, among second grade students and literary comprehension achievement as measured by the Measures of Academic Progress Reading Assessment within a Title I school. For this hypothesis, again a bivariate linear regression was calculated to predict literary comprehension achievement based on oral reading fluency scores. The regression equation for predicting literary comprehension score is, $Y = .0.32X_{\text{fluency score}} + 160.18$. The 95% confidence interval of this slope was 0.28 to 0.37. Table 6 provides a summary of the regression analysis for the variable predicting literary comprehensions scores. Accuracy in predicting comprehension, $R = 0.63$, is moderate. A student's fluency score accounted for 40% of the explained variability in literary reading comprehension (see Table 6).

Table 6

Coefficients

Model	*B*	*SE B*	β
1 (Constant)	160.18	2.36	
(DIBELS) Original Score	0.32	0.02	0.63

Note. [a] Dependent Variable: Informational MAP Comprehension Score
[b] $R^2 = 0.40$ ($p<.001$)

The results show significance evidence to reject the null hypothesis and conclude that fluency scores ($M = 98.66$, $SD = 30.61$) did significantly predict literary comprehension scores ($M = 191.90$, $SD = 15.60$), $F(1, 300) = 198.49$, $p < 001$ (see Table 7).

Table 7

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	29148.459	1	29148.459	198.490	.000[b]
Residual	44055.358	300	146.851		
Total	73203.818	301			

a. Dependent Variable: (L) MAP Original Score
b. Predictors (Constant), (DIBELS) Original Score

CHAPTER FIVE: CONCLUSIONS

Overview

Chapter Five includes a discussion of the study as well as the results with specific reference to each null hypothesis. This section also includes an overall conclusion, limitations, as well as additional research that would be beneficial to add to the field.

Discussion

The purpose of this study was to determine if a predictive correlation exists between oral reading fluency scores and success on three components of comprehension. With literacy rates becoming a growing concern in our nation as states strive to meet the needs of their students and maximize literacy growth in ages 4-8 so that students going into third and fourth grades are still not learning to read, but rather reading to learn. States such as South Carolina have even enacted legislation to identify non-fluent readers at the end of third grade and then retain students who are not determined to be reading on grade level. There are some exemptions from the retention based on inclusion in intensive intervention (South Carolina Department of Education, 2017). According to the research behind the legislation, students that are not proficient readers by the end of third grade, are more likely to not be successful in school (South Carolina Department of Education, 2017). A large focus of the legislation being early reading intervention in grades Kindergarten through second. The assessment for determination of retention or promotion is based on the following foundational literacy skills: visual discrimination, concept of word, alphabetic principle, phonemic awareness, phonics, vocabulary, sentence level comprehension (South Carolina Department of Education, 2017). This stated, there is a great need to intervene on behalf of our underachieving students in the area of reading as soon as possible, with the right intervention being a key.

Null Hypothesis One

A bivariate linear regression was calculated to determine if a predictive relationship existed between oral reading fluency as the predictor variable (M= 98.67, SD= 30.61) and the criterion variable of overall reading comprehension (M= 190.43, SD= 13.31). The data revealed a positive predictive relationship thus, the researcher rejected null hypothesis one, $Y=159.74 + 0.31_{overall}$, $p = <.001$. Regression analysis also illustrated that oral reading fluency explained 51% of the overall reading comprehension in second grade Title I students. With that being stated, 49% of the overall reading comprehension could not be explained by a student's oral reading fluency scores.

The results of this study mirror the findings of, Paleologos and Brabham (2011) that found that there was both a predictive relationship and thus a correlation between oral reading fluency and comprehension. In their study, they found that students who came from high to mid-level socioeconomic status homes the correlation and predictive relationship (fluency to comprehension) was stronger than students from low socioeconomic homes were. Paleologos and Brabham's findings mirrored the current study in that both findings showed a predictive relationship between a subset of students with regard to fluency predicting comprehension. This study also was conducted in three Title I schools which also continued to expand the findings of Paleologos and Brabham.

This current study agreed with the findings of Richards-Tutor et al. as both researched the need for a systematic intervention process based on an initial fluency gap and examined the extent of disconnect that the fluency measure made in overall reading success (2015). This study mirrored the current study as both studies illustrated a connection between oral reading fluency and comprehension.

Much like the above two studies, Hunley et al. researched the need for early intervention based on early literacy gaps surrounding fluency and the connection they had to long term comprehension assessments in a variety of disciplines, (2013). The study showed that students who had gaps in fluency as a child also had gaps in comprehension on mathematics, social studies, and science assessments. Finally, research by Godoy et al., also found that added speed to the point of automaticity would have a positive affect and help students free up their focus and thus increase their ability to focus more on comprehension (2017). All of the above studies showed a correlation between early fluency gaps and gaps in comprehension later in life. Thus, illustrating a correlation that a child with a lower fluency score would also have a lower comprehension score overall. Much like the findings in the research from this study, all researchers were able to see a predictive relationship between fluency and comprehension.

Research in this field is divided, as some of the research findings are not consistent with this study. Suggate's research found that fluency alone did not predict later success in comprehension, but rather weaknesses needed to be identified on an isolated basis into phonics, fluency, comprehension, or vocabulary and additional instruction in a specific area would then be warranted to fill gaps (2016). By identifying specific learning deficits early in life, then appropriate interventions could be put into place to account for address the gaps.

Null Hypothesis Two

A bivariate linear regression was calculated to determine if a predictive relationship exists between oral reading fluency as the between the predictor variable (M= 98.67, SD= 30.61) and the criterion variable of informational comprehension (M= 190.54, SD= 14.98). Again, due to the positive predictive relationship, the researcher rejected the null, $Y=161.97 + 0.29_{informational}$, $p = <.001$. Regression analysis also determined that oral reading fluency accounted for 35% of

the informational reading comprehension in the sample. For the schools in this sample, all reading interventions at the second-grade level are based on increasing success in fluency rates. However, one of the findings of this study is that oral reading fluency could account for certain percentages of comprehension success, but no one variable could account for 100%. Variables such as race, gender, self-appraisal, vocabulary instruction, phonemic awareness deficits, and comprehension understanding could all account for the percentages that are not readily accounted for by fluency (Blicher, Feingold, & Shany, 2017).

This particular variable of informational comprehension specifically has few studies that mirror or contrast this study. Research in the area of oral reading fluency predicting informational comprehension success is quite limited. With regard to oral reading fluency predicting the success of understanding informational text is an area that this study opens up and warrants additional study. Often when referring to the connection between informational reading comprehension and fluency, the topic lends itself to the connection between fluency and conceptual vocabulary; not informational comprehension on its own. While basic understanding of informational texts has many factors, many studies lend themselves towards vocabulary and not fluency, (Liebfreund and Conrad, 2016).

Informational texts are non-fiction in nature and often depend upon prior experiences and an extensive vocabulary (Watkins and Liang, 2014). According to Heppt et al., (2014), the deficit in vocabulary and access to print begins at birth, resulting in low SES children entering school with skills behind those of their more fortunate peers. Their study also mirrors the research in this study as the more of a disconnect students had quickly and accurately reading sight words, the harder time students had in comprehending the story. According to Schechter et al., (2015) as students enter school and an oral reading fluency deficit develops, students are

placed into interventions to address decoding issues in the anticipation as decoding speed increased, so would the ability to comprehend.

The findings of Rasinski et al., (2016) were similar. They examined the relationship between fluency and the understanding of informational text. They found that students with better automatic recall of small sight words were more able to give attention to decoding multisyllabic words. If a student is not fluent in the automatic recall of smaller sight words, it can often impede their ability to decode larger words and thus this study supports the theory of automatic information processing in reading. As students have more difficulty processing smaller word parts and sight words, they also lack the ability to decode larger multisyllabic words quickly. However, if students were able to have intervention centered on the ability to automatically process smaller sight words, then the theory illustrates they would be able to focus more on comprehending and decoding larger words. This theory was illustrated by the findings in this study as it was shown that as students have to focus more on decoding, their ability to focus on comprehending diminished.

In addition to the previous studies that mirror this study, there are also studies that contrast this study. Laufer and Aviad-Levitzky continued to add to the wealth of opposing findings in the field through their study of uncommon phonetic structures. In their study, they found a stronger correlation between vocabulary as a predictor of comprehension success than fluency (2007). Their findings show that in complicated phonetic structures, a strong background in vocabulary is necessary to break words into structural parts such as affixes and root words. This ability to break apart words and determine meaning helps to aid in comprehension. Another study by Beach and O'Connor researched early response to intervention measures and how effective it is to use oral reading fluency scores to determine the

need to retain or test a rising third grader for a reading disability. They found that, such assessments as DIBELS have a limited ability to predict comprehension success, however vocabulary deficits might have a stronger predictive connection, (2015).

Null Hypothesis Three

Finally, a third bivariate linear regression was run to determine if a predictive relationship exists the between oral reading fluency scores as predictor variable (M= 98.67, SD= 30.61) and the criterion variable of literary comprehension (M= 191.90, SD= 15.60). Due to the positive predictive relationship, the researcher rejected the null, $Y=160.18+ 0.32_{literary}$, p= <.001. The regression analysis also showed that oral reading fluency accounted for 40% of literary reading comprehension in the study.

Barth et al., (2013) noted that with regard to literary comprehension, a child needs to be able to decode as well as make connections to a passage when reading to successfully comprehend the given text. Often literary texts, unlike informational texts, include vocabulary that is more readily available for a child to make connections (Barth et. al., 2013). Barth et al., (2013) findings mirror this current study as the findings of this study showed too that there was a positive correlation between oral reading fluency and literary comprehension. Another study that mirrored this researcher's findings was that by Torgesen (2002). In his study, Torgensen found that if a student could automatically recall words as illustrated by the theory of automatic process in reading, then they were at a greater ability to comprehend the story at hand. The findings of this study mirror the current study as both bodies of evidence illustrate that as a child is able to fluently decode, they are then able to focus more on comprehension and that an increase in oral reading fluency equates to an increase in comprehension scores as well. Overall, literary texts vary from informational texts in that they often follow a narrative text structure that

is easier to predict when reading. Often these stories provided the student with the ability to focus on comprehension as much of the decoding within the story follows a predictable pattern that frees the learner to be able to comprehend at a greater rate, (Brennan and Booth, 2015).

Implications

Currently in the state of South Carolina according the 2015-2016 ACT data located in the South Carolina State Reading Plan and Annual Proficiency Update, 70.5% of students who took the assessment are not ready to be successful in college level reading classes (2017). According to research conducted by Wagner, Coolong-Caffin, and Deris, overall as a nation, one-third of fourth grade students read below their grade level, (2017). In addition, as research by Christle and Yell noted, prisons are becoming a too common place for adults and youth who cannot read (2008). As states continue to create legislation to help create more literate students and as prisons continue to fill with young adults who cannot read, the need is ever pressing for educators to identify weakness and address early interventions in our younger learners.

In this study, the regression analysis showed a significant predictive relationship between oral reading fluency and overall comprehension, informational comprehension and literary comprehension. In addition, it was found that oral reading fluency accounted for 51% of the overall comprehension score in this study. However, if educators only provided intervention in oral reading fluency, there are still 49% of outside factors that could have the same affect. The implication of this study is that educators need to research and determine what other factors also correlate with overall comprehension achievement and address these factors through early intervention. The same was true for informational comprehension as well as literary comprehension. The regression analysis for oral reading fluency illustrated that this predictor variable accounted for 51% of the overall comprehension score, 35% of the informational

comprehension score and 40% of the literary comprehension score. Again, researchers need to determine what accounts for the other 49% of overall comprehension, 65% of informational comprehension and 60% in literary comprehension.

Many variables account for the remaining percentages that oral reading fluency did not account for in this study. Each of these variables could lead a student towards success in comprehension when oral reading fluency does not. Many of the current fluency centered research based intervention programs are not beneficial. According to Wagner, Coolong-Chafin, and Deris, a large number of students simply do not show sufficient response and need a different type of intervention (2017). The intervention needs to be based on consideration of needs and gaps and the appropriate intervention used to grow the student.

According to the findings in this study, the greater the success in oral reading fluency, the greater success in comprehension. However, there are other factors that could also account for comprehension success. As previously stated, oral reading fluency scores were able to predict success at a rate of 51% for overall comprehension, 35% for informational comprehension, and 40% for literary comprehension. If schools only offer interventions for oral reading fluency, they are not considering other possible areas of literacy that could possibly also affect overall comprehension scores as well.

This particular study added to the body of knowledge by supporting that oral reading fluency does in fact predict comprehension success. It also added to the body of knowledge by showing that other factors could also predict success in comprehension in addition to oral reading fluency. Thus, leaving the door open for further studies to determine the strength of other literary factors in predicting comprehension success. Also, this study was done with students at a Title I school and thus adds to the body of knowledge by utilizing a specific

population to take a closer look at the predictive correlation with students from low socio-economic means.

The variability for each that was not explained by oral reading fluency could also be caused by a list of other factors such as race, gender, socio-economic status, phonemic awareness gaps, vocabulary gaps, students who are just learning the English language, and even theories behind self-concepts about reading (Pey et al., 2014). Sadeghi and Izadpanah (2018) found that for students with limited English language proficiency, many times their background knowledge is not enough to carry them through a text. The students often stop during their reading to go to another source to understand a vocabulary term and then once that is understood, they return to the original passage. However, having to stop their reading interferes with their ability to read at a fluent rate. This cuts into successful fluency practice as words and concepts might not come as quickly to these students. Finally, a child's perception of their reading ability could also be another motivator or factor that could account for the predictability of comprehension success as well (Kasperski, Shany, and Katzir, 2016).

While this study found that oral reading fluency did predict overall reading comprehension, informational comprehension, and literary comprehension scores, there are still other factors within this present study that indicate there are other factors that impact a students' ability to comprehend text. Suggestions for further research is listed at the end of this chapter. While previous research mirrors and opposes this study, this study took the research one-step further by utilizing three Title I schools as the sample. By utilizing three Title I schools, the researcher helped to narrow the field towards identifying the relationship in students from low socio-economic homes. While that was not the focus of the study, it did extend the body of

knowledge not only by utilizing a specific population, but also by identifying exact percentages of comprehension success that are not identified by oral reading fluency scores alone.

In conclusion, by using the findings in this study, schools can continue to strengthen oral reading fluency programs, but also begin to offer interventions in areas other than oral reading fluency in the hopes of addressing other deficits in literacy that may also predict comprehension success. By offering a variety of interventions, schools can begin to meet more individual needs of their students and hopefully begin to see even more growth in their students with regard to overall, informational, and literary comprehension success.

Limitations

Correlational research can suggest that there is a relationship between two variables, however it cannot prove that one variable causes a change in another variable. Within this study, the researcher found three significant predictive relationships. While there is other correlational research illustrating predictive relationships, the analysis used in this and similar studies, cannot determine any cause of comprehension. The findings of this study should not be generalized beyond this population.

This study was limited to three Title I schools within the school district in which the researcher works. Three schools were chosen due to their Title I status. By choosing schools that had state Title I identification, those schools have at least 65% of the students who received free and reduced lunch. The results of this study may not be used to make generalizations about other public schools that do not have Title I status, as the demographics with regard to socioeconomic status would be different.

Another limitation is that the researcher had to rely on teachers to administer the assessments and could not test the students herself. While this is often a measure in many

studies, it offers a limitation. Even though the researcher conducted her own training session and also attended the same district training session as the teachers who provided the assessment, it still was a variety of teachers with whom we trust followed the established protocol. In addition, an added limitation is the number of years that the teachers have administered the assessments. This is a limitation because teachers for whom this was their first year not only could have made mistakes, but also have the inexperience of not knowing what the format of the test looks like. For instance, teachers that have given both assessments for years understand the types of questions and issues that can occur when taking the assessments. These teachers are then able to build their instruction throughout the year to teach students how to think through these types of assessments. Inexperienced teachers may not yet know how to best prepare their students to perform well on this type of assessment.

Recommendations for Further Research

The findings of this study shows a need for further investigation into reading fluency and comprehension. Suggestions for future studies are listed below.

1. Correlation between vocabulary and reading comprehension
2. Correlation between gender and reading comprehension
3. ‘Correlation between race and reading comprehension
4. Correlation between socio-economic status and reading comprehension
5. Correlation between English as second language learners and reading comprehension
6. Replicate the study with a population who does not receive a fluency based intervention.
7. Factors that help to predict informational reading comprehension

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Appendix

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

July 20, 2018

Carrie Mott
IRB Application 3410: The Relationship Between Oral Reading Fluency Scores as an Indicator of Reading Comprehension Achievement

Dear Carrie Mott,

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 does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

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

Sincerely,

[redacted]

The Graduate School

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