EASYCBM AND THE TENNESSEE COMPREHENSIVE ASSESSMENT PROGRAM: A CORRELATIONAL ANALYSIS OF READING ACHIEVEMENT

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

Current trends in education suggest that the best way to help struggling readers is to provide academic intervention before they fall too far behind. Schools that use annual standardized test scores to determine students' academic deficiencies, and thereby their need for intervention, only receive these score reports once per year, often several weeks or months after the students have been assessed. The purpose of this correlational analysis of reading achievement was to compare students' performance on the EasyCBM progress monitoring tool to students' performance on the Tennessee Comprehensive Assessment Program for third, fourth, and fifth grade students at a suburban elementary school in southeast Tennessee. Two theories framed this study: Vygotsky's zone of proximal development and Dweck's growth mindset theory. The central research question in this study was: Is there a relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)? The participants were drawn from a convenience sample of third through fifth graders who participated in both May 2019 EasyCBM Passage Reading Fluency assessments and the 2019 summative TCAP in English Language Arts.

Archival data from these two assessments were gathered and analyzed to determine a possible relationship. Correlation results found statistically significant correlations between EasyCBM Passage Reading Fluency scores and TCAP English Language Arts scores for each individual grade level analyzed as well as overall.

Keywords: curriculum based measurement, intervention, reading fluency, assessment

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List of Abbreviations

Curriculum Based Measurement (CBM)

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Elementary and Secondary Education Act (ESEA)

English Language Arts (ELA)

Every Student Succeeds Act (ESSA)

Florida Comprehensive Assessment Test (FCAT)

Individualized Education Plan (IEP)

Individuals with Disabilities Education Act (IDEA)

Intelligence Quotient (IQ)

Learning Disability (LD)

Multi-Tiered Systems of Support (MTSS)

National Association of Educational Progress (NAEP)

No Child Left Behind (NCLB)

Oral Reading Fluency (ORF)

Response to Instruction and Intervention (RTI^2)

Response to Intervention (RTI)

Specific Learning Disability (SLD)

Stanford Achievement Test (SAT-10)

Tennessee Comprehensive Assessment Program (TCAP)

Tennessee Value Added Assessment System (TVAAS)

Zone of Proximal Development (ZPD)

CHAPTER ONE: INTRODUCTION

Overview

This chapter provides a theoretical understanding of cognitive psychology and growth mindset as well as related literature on reading intervention programs, their connection to standardized test results, and related reading assessment tools. This chapter provides an overview of the study's correlational research design. The first section discusses the background of Response to Intervention (RTI) programs in reading and reading assessment. The second section synthesizes the recent literature pertaining to RTI programs followed by studies on reading assessment tools. Finally, the problem statement, purpose statement, significance of the study, and research questions are presented.

Background

Reading intervention has been a popular topic in education for many years. Since 2002, when *No Child Left Behind* (NCLB) (2002) legislation required states and school districts to adopt research-based reading programs, reading intervention has been a part of the political conversation surrounding education. Wright and Wright (2003) explained that the purpose of this requirement was to ensure all children were reading on grade level by the end of third grade, and one reason for the focus on third grade reading outcomes was the assertion that students who are not reading on grade level by third grade are more likely to struggle in school. In fact, "A student who is reading below grade level by third grade is four times less likely to graduate by age 19 than a child who reads proficiently by that time" (Sparks, 2011, p. 5). When students are living in poverty, they are 13 times less likely to graduate on time if they are reading below grade level by third grade (Sparks, 2011). These statistics are alarming and cause educators to

search for ways to intervene and remediate their youngest readers in order to avoid this phenomenon.

In addition to students simply reading below grade level, NCLB sought to address a growing issue in special education. In the early 2000s, a new method for determining whether a student had a learning disability was presented by the U.S. Department of Education (Tennessee Department of Education, 2015). This new method was called Response to Intervention, or RTI. This came about as a response to an increase in the number of students identified as having a learning disability, and there was increasing national concern regarding the effectiveness of the assessments used to diagnose learning disabilities at the time (Arden, Gandhi, Zumeta Edmonds, & Danielson, 2017). NCLB dedicated $6 billion of funding to Reading First (Bean, Dole, Nelson, Belcastro, & Zigmond, 2015), a concerted effort to improve instruction for students in reading, and RTI fit this need. Reading First was the first NCLB reading initiative aimed at improving outcomes for underperforming students, according to Fuchs, Fuchs, and Vaughn (2008). The goal of Reading First was to "improve students' literacy outcomes through the use of research-based instruction, assessment, teacher training, and program evaluation" (Connor, Jakobsons, Crowe, & Meadows, 2009, p. 221). One purpose of requiring a research-based reading program that focuses on skill development was to provide specific interventions based on students' demonstrated needs as a result of universal screening results (Tennessee Department of Education, 2015).

In 2015, Congress reauthorized the *Elementary and Secondary Education Act*, the statute formerly known as NCLB. The new statute, entitled *Every Student Succeeds Act* (ESSA), contains similar requirements regarding academic intervention and research-based programs aimed at providing strategic interventions proven to help close the achievement gap in reading

and mathematics. During the 2016-2017 school year, states were forced to revise their accountability systems to comply with the new ESSA requirements, but they were given more autonomy to determine how their schools would be held accountable for student academic performance (Ferguson, 2016). Even with the changes in legislation, RTI continued to meet the federal requirements for accountability and the use of research-based programs for academic intervention.

RTI is based on the premise that schools should not wait until students fall far enough behind to qualify for special education to provide them with the help they need. "Instead, schools should provide targeted and systematic interventions to all students as soon as they demonstrate the need" (Buffam, Mattos, & Weber, 2010, p. 10). In 2014, the Tennessee State Board of Education adopted RTI², which stands for Response to Instruction and Intervention, as its statewide approach to providing all students with support and access to high quality instruction and intervention. In order to accomplish this, schools implement a school-wide screening assessment in reading and mathematics and then use the results of the screener to determine which students demonstrate the need for intervention. In Tennessee, the RTI² Framework provides percentiles as guides for schools when determining how many students will need intervention (Tennessee Department of Education, 2015). For example, almost half of Tennessee's students are not on grade level in reading and math by the time they complete third grade (Stone, 2016); however, due to scheduling and budgetary constraints, it can be difficult for schools to provide targeted intervention to half of the student body.

To manage these high numbers, the RTI² Framework suggested that 80-85% of students should have their needs met in the general classroom, also referred to as Tier I, through high-quality, research-based, general education instruction. In addition to Tier I instruction, the

framework suggests that extra instruction in the form of Tier II interventions should be provided to 10-15% of students who have identified as “at-risk” in basic mathematics and reading skills. Finally, the framework suggests that only three to five percent of students should be either significantly below grade level in basic mathematics and reading skills or have been participating in Tier II instruction for a period of time without progress. These students should then be served through Tier III interventions, which are more intensive than Tier I or Tier II interventions (Tennessee Department of Education, 2015). If these interventions are provided for an appropriate length of time and the student fails to make adequate progress toward benchmark goals, a possible referral for a learning disability should then be considered (Stone, 2016).

Now that RTI has been in effect for nearly two decades and has been widely adopted, several studies have focused on its effectiveness, garnering mixed reviews. For example, *Education Week* published an article titled, “RTI Practices Fall Short of Promise” (Sparks, 2015), which indicated that RTI was not overwhelmingly effective for students who have fallen behind in reading and mathematics. On the contrary, some studies have shown that students who received Tier II or Tier III instruction made greater gains on standardized assessments such as the SAT-10 than their peers who did not receive tiered intervention (Baker, Smolkowski, Chaparro, Smith, & Fien, 2015). Gersten, Jayanthi, and Dimino (2017) authored an article highlighting a national RTI evaluation that was completed in 2015. The results did not suggest that reading intervention was completely ineffective, but it did not suggest that it was completely effective, either. Another study indicated that tiered reading intervention had a statistically significant effect on phonemic awareness and word decoding but not on reading fluency and comprehension in grades one and two, small effects on reading fluency in grades two and three, and reading comprehension effects in grade two only (Coyne et al., 2018). This inconsistency

could make it difficult for schools who serve students in multiple grades to deliver appropriate intervention to struggling students. To complicate matters, a recent study has shown that students' growth may be nonlinear, meaning that students who regress or do not show immediate growth during or after targeted intervention may continue to improve in the years following the intervention (Van Norman & Parker, 2016). Yet another study indicated that early intervention may have an impact on students' long-term achievement outcomes, whether or not they saw positive short-term results (Grapin, Waldron, & Joyce-Beaulieu, 2019).

According to Castro-Villarreal, Rodriguez, and Moore (2014), teachers feel that lack of adequate training, lack of time, lack of resources, the RTI process, and RTI paperwork are barriers to RTI effectiveness. In addition, several studies have shown that the effectiveness of a school's RTI program is dependent upon proper implementation (Balu, Zhu, Doolittle, Schiller, Jenkins, & Gersten, 2015; Vellutino, Scanlon, Zhang, & Schatschneider, 2008). Other studies support these teachers' concerns. A study that examined the relationship between the integrity of RTI implementation and student reading outcomes found that, when controlling for demographic variables, both data-based decision making and Tier III implementation significantly predicted reading assessment performance (Sharp, Sanders, Noltemeyer, Hoffman, & Boone, 2016). These studies indicated that in order to assess the effectiveness of an RTI program, the program must be conducted with integrity and fidelity. In order to identify the students who are in need of reading intervention, an assessment must be given to determine their current level of understanding and ability. The most common assessments found in the literature are the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) and AIMSweb, which are both considered curriculum based measurement tools (Grapin, Kranzler, Waldron, Joyce-Beaulieu, & Algina, 2017).

Curriculum based measurement tools, or CBMs, were developed at the University of Minnesota in the late 1970s and early 1980s (Deno, 1985). The primary goal of the research project that led to CBM development was to "develop measurement and evaluation procedures that teachers could use routinely to make decisions about whether and when to modify a student's instructional program" (Deno, 1985, p. 221). Characteristics of CBMs include reliability and validity, simplicity and efficiency, easy to understand results, and inexpensive cost (Deno, 1985). One of the five components of literacy that CBMs attempt to measure is oral reading fluency. Oral reading fluency risk levels are assigned cut scores to indicate whether a student is at low risk, some risk, or high risk for not reading on grade level due to oral reading fluency skills (Roehrig, Petscher, Nettles, Hudson, & Torgeson, 2008).

Yeo (2010) explained that numerous studies over the past 25 years have demonstrated that CBM probes are reliable and valid indicators of student performance; however, Goffreda and DiPerna (2010) reviewed the DIBELS assessment, which is an example of a CBM tool and found strong reliability and validity evidence for the oral reading fluency portion of the test but a greater variability in the evidence for the remaining indicators. Studies have found that those cutoff scores for Oral Reading Fluency (ORF) matter when determining a connection to standardized test results. Roehrig et al. (2008) found that "recalibrated ORF risk-level cut scores derived from ROC (receiver-operating characteristic) curve analyses produced more accurate identification of true positives than previously established benchmarks" (p. 343). This means that when researchers tested results using a ROC curve and then adjusted risk level cut scores accordingly, there was a greater connection to Florida Comprehensive Assessment Test performance level reports.

Other studies have looked at school-wide growth of ORF as measured by CBM tools and used this growth score to compare progress with other schools across the nation (Cummings, Stoolmiller, Baker, Fien, & Kame'enui, 2015). Although this does not connect CBM growth to standardized assessment growth, it is a useful tool for schools to see how they stack up with other schools using the same CBM assessments. There are many factors that impact student achievement, and schools' achievement levels may vary due to factors outside of the instructional program; however, it could be helpful for schools to see where they stand among other schools with similar student demographics (Cummings et al., 2015).

If DIBELS and CBM scores can predict reading achievement, do those scores have any relationship to high-stakes standardized test scores? Some reports claim they do. In a study that evaluated the accuracy of a second grade oral reading fluency CBM in predicting third grade standardized state test performance in reading in Florida, the authors stated that "the DORF measures generally had adequate utility in predicting FCAT performance" (Grapin et al., 2017, p. 943).

This dissertation focused on two theories: Vygotsky's (1978) zone of proximal development (ZPD) and Dweck's growth mindset theory. Lev Vygotsky was a Russian and Soviet psychologist who first introduced this concept in the early 1930s. Vygotsky's ZPD centers on the notion that children can grow intellectually with the help of others who are cognitively more capable. Vygotsky (2011) refers to a child's level of actual development as the level of tasks that the child can complete independently; however, the ZPD, as defined by Vygotsky, is the difference between the child's level of actual development and the level of possible development, which is the level of tasks the child can complete with the help of adults or more capable peers (Vygotsky, 1978). It is important to note that Vygotsky viewed learning stages as

zones, and only what is within the next developmental zone can be learned through interactions with others (Eun, 2018). The interaction between the adult and child is "essential for mental development" because the child learns the ideal form of behavior in a given situation from the adult, or teacher (Gredler, 2012, p. 119). When extending this concept to education, instruction should only focus on the skills that are in the next developmental zone and are ready to be developed with support from the adult or more capable peer. The goal, then, is that the learning will be retained once the support is removed (Eun, 2018).

In addition to Vygotsky's work on the ZPD, many research studies have focused recently on what Carol Dweck (2007) calls "growth mindset." Growth mindset is the opposite of a fixed mindset. In a fixed mindset, people believe that their basic qualities are unchangeable. For example, one might think that they are unskilled at math and have no control over that fact. In a growth mindset, however, people believe that their basic qualities can be changed through effort and dedication. The people who struggle in math, then, might believe that they could improve their math skills through practice if they have a growth mindset. Dweck (2010) further asserts, "Individuals with a fixed mindset believe that their intelligence is simply an inborn trait - they have a certain amount and that's that. In contrast, individuals with a growth mindset believe that they can develop their intelligence over time" (p. 16).

RTI$_2$ in the state of Tennessee is mandated early intervention to address deficits in student learning in reading and mathematics. The RTI^2 Framework, published by the Tennessee Department of Education (2015), outlines specific procedures for tiered interventions as well as special education eligibility procedures if the interventions do not improve student deficits over time. Appropriate RTI implementation includes research-based programs implemented with fidelity according to the guidelines outlined within the framework.

Since Tennessee's legislature mandated the use of this multi-tiered intervention system in 2014, a tremendous amount of resources have been allocated to fulfilling this mandate at the district level by way of interventionists' salaries, RTI² coordinator positions, research-based program costs, and time taken from core instruction in the general education setting. In Tennessee, it is reported that "in some cases, schools have restructured budgets to accommodate salaries for interventionists and districts have hired coordinators to oversee the system-wide efforts" (Tennessee Department of Education, 2018a). Grapin et al. (2019) present several studies in their research with mixed reviews of the effectiveness of RTI interventions in reading, which causes one to wonder whether all of the time and money districts have been pouring into RTI over the last several years have truly impacted student growth and achievement in a positive way.

Problem Statement

Several research studies have investigated the effect of RTI on student achievement; however, no studies have been conducted to explore the correlation between a student's CBM score using EasyCBM and his or her annual state standardized assessment score in Tennessee. Therefore, this study sought to answer whether or not there is a correlation between a student's EasyCBM Passage Reading Fluency assessment score and English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

The problem is that no previous studies have compared students' achievement on both EasyCBM Passage Reading Fluency and the TCAP English Language Arts assessment; therefore, there was no known connection between these two assessments. This study examined an area that current research had not addressed in order to provide educators and policymakers in Tennessee with relevant information. Students in Tennessee participate in universal screening

using a curriculum based measurement tool three times per year and only take the TCAP assessment once at the end of the year. If EasyCBM Passage Reading Fluency scores correlated to TCAP English Language Arts scores, Tennessee educators could potentially use EasyCBM data to inform instruction prior to the state assessment at the end of the school year.

Purpose Statement

The purpose of this correlational analysis was to compare students' performance on the EasyCBM progress monitoring tool to students' performance on the TCAP for third, fourth, and fifth grade students at a suburban elementary school in southeast Tennessee. If these scores were correlated, this information could help Tennessee educators intervene and provide appropriate support to struggling students in reading earlier in the school year without waiting on TCAP results that are released after the students have left their classrooms during the summer months. The independent variable, students' performance on EasyCBM progress monitoring tool, was generally defined as students' correct words per minute on the Passage Reading Fluency assessment in May 2019. The dependent variable, students' performance on the Tennessee Comprehensive Assessment Program, was generally defined as students' raw scores on the TCAP English Language Arts assessment in April 2019.

The participants for the study were drawn from a convenience sample of third through fifth grade students in a single elementary school located in southeastern Tennessee during the 2018-2019 school year. The school district is located within a middle-income suburb outside of a growing metropolitan area. Participants for the study were students who participated in the end-of-year TCAP in April 2019 as well as the EasyCBM assessment in May 2019.

Significance of the Study

Studies similar in design have previously been conducted to determine correlations between skills-based reading assessments, such as DIBELS, and standards-based reading assessments administered by state departments of education. For example, Roehrig et al. (2008) examined the accuracy of the DIBELS oral reading fluency measure for predicting third grade reading comprehension outcomes. The difference is that this study explored the correlation between students' passage reading fluency scores and their annual state standardized assessment scores to determine whether students' performance on EasyCBM passage reading fluency assessment correlated to students' performance as measured by TCAP English Language Arts. This is valuable because educators can use this information to make instructional decisions throughout the school year. If EasyCBM is given multiple times per year, this could inform educators where students stand prior to the end-of-year TCAP English Language Arts assessment.

Research Questions

RQ1: Is there a relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ2: Is there a relationship between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ3: Is there a relationship between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ4: Is there a relationship between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Definitions

1. *Curriculum Based Measurement (CBM)* – A system for frequent monitoring of student progress within a specific curricular program. Results from CBM assessments are used to determine whether students are making appropriate academic progress in reading and mathematics (Tennessee Department of Education, 2015).
2. *Intervention* – Specialized instruction aimed to address specific skill deficits and meet individual academic needs of students based on data. The goal of intervention is to help students grow academically to achieve grade-level performance (Tennessee Department of Education, 2015).
3. *Passage Reading Fluency* – A standardized reading assessment that measures reading fluency with connected texts (Tennessee Department of Education, 2015).
4. *Reading Fluency* – The ability to read words quickly and accurately (Tennessee Department of Education, 2015).
5. *Response to Instruction and Intervention (RTI²)* – Mandated early intervention in the state of Tennessee to address deficits in student learning in reading and mathematics (Tennessee Department of Education, 2015).

CHAPTER TWO: LITERATURE REVIEW

Overview

This study focused on student academic progress and how that progress is reported on standardized assessments. To fully grasp the importance of this focus, one must examine current educational theories that focus on both student achievement and academic growth. It is also crucial to understand the current educational climate surrounding assessment and reporting in the United States. This chapter introduces the reader to two theories on student achievement and growth, literature that supports the importance of students reading on grade level by the end of third grade, and current literature regarding academic intervention and the recent changes in how students with specific learning disabilities are identified. In addition, this chapter explores standardized assessment practices such as standards-based assessments as well as curriculum based or skills-based assessments.

Conceptual or Theoretical Framework

This study was grounded in two popular educational theories: Vygotsky's (1978) Zone of Proximal Development (ZPD) and Dweck's (2007) growth mindset theory. One theory states that children can grow intellectually with the help of others who are cognitively more capable (Vygotsky, 1978), and the other theory supports the notion that growth is influenced by mindset (Dweck, 2007). Both theories support the researcher's core belief that all students are capable of learning at high levels when given appropriate support.

Vygotsky's ZPD is the most researched and studied concept of all of Vygotsky's writings (Eun, 2018), even though in his six volumes of work, less than 15 pages discuss the ZPD (Gredler, 2012). This concept provides principles regarding how learners learn and centers on the notion that children can grow intellectually with the help of others who are cognitively more

capable (Vygotsky, 1978). Vygotsky defined the ZPD as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Vygotsky referred to learning stages as zones and implied that only what is within the next developmental zone can be learned through interactions with others (Eun, 2018). It is important to assess a learner's intellectual functions that are currently developing in order to determine the next step (Gredler, 2012). If goals are set too far beyond the learner's current development, they could prove to be too difficult to achieve. In contrast, if goals are set within the learner's current skill set, the learner may not have the opportunity to grow and mature beyond his or her current level of development (Eun, 2018).

Vygotsky felt so strongly about providing learners with new tasks and appropriate support, he claimed that adolescent learners would not reach their full academic potential without new goals and appropriate tasks (Gredler, 2012). In order to teach to the ZPD, instruction should only focus on the skills that are in the very next developmental zone and are ready to be developed with support from an adult or more capable peer. Eun (2018) asserts:

> What one can achieve only with the support from others becomes what one can perform independently. This in turn becomes the beginning point for the next ZPD. As this process continues, the zone never stops shifting its point of departure and final destination. (p. 21)

Interestingly, while education policymakers commonly express the belief that starting children in school earlier and providing academically rigorous pre-kindergarten and kindergarten programs increases elementary school readiness, Vygotsky's writings disagree with this concept (Gredler, 2012). Applying Vygotsky's conceptual framework to this modern-day issue generates concerns

that young children have not yet developed the relationships of generality between concepts that is necessary for academic learning (Gredler, 2012). In addition, many state and national academic standards require young children to utilize mental strategies for which they may not be developmentally ready. For example, while the National Council of Teachers of Mathematics standards require primary students to analyze certain mathematical concepts, Vygotsky's writings argue that it is not developmentally appropriate to require children of that age to analyze concepts (Gredler, 2012).

The ZPD is very evident in the field of education, where teachers scaffold instruction with supports in order to maximize student learning. This concept is important to this study because RTI is based on the notion that students who suffer from academic deficits need focused and research-based intervention from a trained professional in order to maximize their learning potential (Tennessee Department of Education, 2015). The intervention must also be done with fidelity, which means that the teacher must follow a structured protocol in order to ensure the student is receiving adequate intervention.

Vygotsky is not the only researcher interested in student growth and development, however. Carol Dweck (2007) has coined the term "growth mindset" to refer to the belief that one's abilities can be improved through effort. Dweck's growth mindset theory summarizes nearly four decades of psychological research regarding how a person's mindset affects his or her learning and success (DeLuca, Coombs, & LaPointe-McEwan, 2019). Dweck asserts that mindset sits on a continuum from growth mindset to fixed mindset. A person with a growth mindset believes that, through effort, ability and intelligence can be changed. On the other hand, a person with a fixed mindset believes that a person is born with certain abilities and intelligence and that is not likely to change (DeLuca et al., 2019). Students with a fixed mindset might be

overly concerned with looking intelligent. They might avoid challenging tasks that would actually help them learn because they fear making mistakes or appearing unintelligent (Dweck, 2010). Students with a fixed mindset also do not value hard work. They feel that intelligence should come easily and cannot be changed through hard work and effort. On the other hand, students with a growth mindset may look forward to challenging work because they see it as an opportunity to learn more than they currently know. They also appreciate effort. Students with a growth mindset understand that it takes hard work and effort to learn and develop into their potential (Dweck, 2010).

Growth mindset is much more than just effort, Dweck (2007) asserts. Obviously, effort is key to student achievement, but students also need strategies that they can use to help them learn new concepts. If a student gives a good effort but has no strategies for learning, learning is not likely to occur. A learner needs both effort and strategies to be successful. Teachers can play a significant role in providing students appropriate learning strategies that will help them be successful.

Dweck (2010) also asserts that teachers can design and implement learning tasks that foster growth mindset in students. For example, a teacher may ask students to choose an area in which they wish to improve and then design learning tasks to help them reach their goals. In addition, teachers should design learning tasks that provide an opportunity for all students to learn and grow, no matter what prior knowledge they bring to the lesson. Dweck (2010) asserts that students should never be allowed to coast and should be held accountable to further their knowledge. If students already know the content being presented, the teacher has a responsibility to provide more challenging work. The teacher should express excitement when presenting challenging learning tasks in order to promote a positive mindset toward hard work and effort.

It is also important for teachers to provide the right type of praise and affirmation to students in order to promote a growth mindset (Dweck, 2010). Teachers should praise students for hard work and dedication to a task instead of praising them for simply arriving at the correct answer. They should praise students for trying a variety of learning strategies as well. Teachers should also ensure that students understand that rushing through an assignment or learning task does not always lead to the most meaningful learning or deep understanding of a concept (Dweck, 2010). In this way, teachers can help their students achieve long-term success instead of simply mastering the content within their course.

In education, it is important for teachers to operate from a growth mindset so they can affect their students' beliefs about themselves as learners. "When students hold growth mindsets, they believe their abilities can improve, which leads to higher grades and greater academic persistence" (McCutchen, Jones, Carbonneau, & Mueller, 2016, p. 208). This also can have an impact on students' long-term growth and success. The growth mindset theory is crucial to the study because, again, RTI is built on the premise that with appropriate instruction and fidelity, students can close achievement gaps and skill deficits.

Achievement gaps and skill deficits are often tested using standardized assessments. Standardized assessments are nothing new; in fact, the history of standardized tests goes back many centuries to the third century BCE in imperial China (Himelfarb, 2019). Proficiency assessments were used to qualify Chinese aristocrats for civil service in areas such as archery, arithmetic, horsemanship, and calligraphy. Years later, assessments were developed in order to determine who was qualified to serve the Chinese emperor. The emperor came up with the topics for the exams, such as knowledge of geography, poetry, and military affairs (Himelfarb, 2019). In the late 1880s and early 1900s, Francis Galton and Alfred Binet developed and administered

some of the first large-scale academic standardized assessments with the purpose of first measuring human ability and then identifying children who were falling behind other students academically (Himelfarb, 2019). During the 20th century, the United States began utilizing large-scale testing for military and educational purposes. This was the beginning of the school accountability era that continues today.

In the past, standardized test results simply focused on student proficiency (National Education Association, 2014). Sometimes that proficiency level was relative to the proficiency level of the learner's peers, also known as norm-referenced. Other times, the proficiency level was relative to the content on the assessment, or criterion-referenced. Standardized test scores are still reported in this way; however, many states are changing how they report student success (Amrein-Beardsley & Holloway, 2019).

Student success is now measured in multiple ways, including relative achievement and academic growth. This is because it is possible that a student makes progress in an academic year but still does not meet mastery criteria or perform well compared to his or her peers. Maybe the student's standardized test results show that he has not mastered grade level skills, but growth reporting shows that he has grown two grade levels during one academic calendar year, which is remarkable. In this instance, even though the student is still operating in a deficit, he is making gains and closing the gap.

In the opposite way, it is possible that a student does not make satisfactory academic progress in an academic year, but that student's achievement score demonstrates mastery. The student may have even performed better than her peers. However, it is possible that her achievement has been so high in previous years, that even a decline in achievement would not trigger concern to her parents or teachers when absolute achievement scores are the only reported

measure. Therefore, reporting student growth provides necessary information about that student's academic progress. The Tennessee Department of Education (n.d.) explains that growth scores should be utilized alongside achievement scores to glean a full picture of a student's performance. Because student performance in Tennessee is compared to that of grade level peers, growth scores have the ability to remain stable throughout statewide assessment changes and changes to the academic standards themselves (Tennessee Department of Education, n.d.-b). When growth scores are examined, the full picture of the student's learning emerges, and educators can make appropriate decisions to remedy the situation immediately and get the high-achieving student back on track.

The research in this study relates to Vygotsky's ZPD and Dweck's growth mindset theories in that the focus is on both student achievement and academic growth. Examining whether two measures of student achievement in reading could potentially correlate could provide credibility to the assertion that students' abilities can improve through effort, dedication, and the assistance of a teacher or peer throughout the school year. This research could assist educators and administrators in designing appropriate instructional scaffolding and intervention for students to help increase student achievement in reading. In addition, this research could help educators make individualized instructional decisions based on the results of a skills-based assessment given at the beginning of the school year rather than waiting for the results of the end-of-year standards-based assessment.

Related Literature

Reading on Grade Level by Third Grade

According to the Annie E. Casey Foundation, "Reading proficiently by the end of third grade can be a make-or-break benchmark in a child's educational development" (2010, p. 9).

Third grade represents the point in children's educational careers when they transition "from *learning to read* to *reading to learn"* (Toste & Ciullo, 2017, p. 259). Prior to third grade, much of students' school days is spent learning to decode words and make sense of what they are reading. Beginning in third grade, however, they must use those decoding and comprehension skills to learn content in other academic areas, such as science, social studies, and mathematics, and to solve complex problems and communicate their learning to others. In Tennessee for example, a third grade reading standard states, "Read and comprehend stories and poems at the high end of the grades 2-3 text complexity band independently and proficiently" (Tennessee State Board of Education, 2017, p. 40). In other words, students are expected to read on grade level independently in order to master the state standards.

Wright and Wright (2003) explain that students who are not reading on grade level by third grade are more likely to struggle in school. Sparks (2011) confirms this sentiment and adds, "A student who is reading below grade level by third grade is four times less likely to graduate by age 19 than a child who reads proficiently by that time" (p. 5). Students living in poverty are 13 times less likely to graduate on time if they are reading below grade level by third grade (Sparks, 2011). The Annie E. Casey Foundation estimated in 2010 that, if this is true, then 6.6 million children would be at risk of failing to graduate on time due to their inability to read proficiently by third grade combined with their families' income status.

Graduating high school on time is important, according to the Annie E. Casey Foundation, because "every student who does not complete high school costs our society an estimated $260,000 in lost earnings, taxes, and productivity" (2010, p. 5). High school dropouts are more than 70% less likely to be employed than high school graduates, and if they are employed, the annual income of high school dropouts is much lower (Backman, 2017). Not

graduating high school could lead to a continuation of poverty, making this a generational problem as well (Baydu, Kaplan, & Bayar, 2013).

According to the Children's Defense Fund (2010), an American high school student drops out of school every eight seconds, resulting in approximately 1.2 million young adults having a limited education (U.S. Department of Labor, 2012). In addition, students who do not complete high school are more likely to have children as teenagers and more likely to be arrested. In fact, over half of state prisoners and almost two thirds of federal prisoners have children of their own, meaning that more than two million children in America have at least one incarcerated parent (Hagan & Foster, 2012). In 2017, 13% of children lived with families in which the head of the household did not have a high school diploma (Annie E. Casey Foundation, 2019). These issues come at an additional cost to their communities and contribute to the already numerous barriers that exist for children living in poverty (Hagan & Foster, 2012).

Even if students do graduate on time, there is still no guarantee that they will become productive members of the nation's workforce. Many high school graduates do not enter the workforce with the skills necessary to be successful (Hedrick, 2015). Approximately 75% of Americans aged 17 to 24 cannot join the U.S. military, and one of the reasons is because they do not have the necessary education and skills (Annie E. Casey Foundation, 2010). These alarming statistics concern educators and policymakers and have led to legislative mandates regarding reading intervention in recent years.

In 2010, The Annie E. Casey Foundation published a special report, *Early Warning: Why Reading by the End of Third Grade Matters.* This report launched a national campaign focused on grade-level reading proficiency. In 2013, the foundation revisited this issue and published *Early Warning Confirmed: A Research Update on Third-Grade Reading.* The updated report

contained newer research that simply confirmed the foundation's original concerns that early grade reading proficiency levels in the United States are alarmingly low even several years after the initial warning. In addition, the 2013 report details how students from low-income families and who attend high-poverty schools are failing to meet proficiency levels on the National Assessment of Educational Progress (NAEP) at a much higher rate than their non-economically disadvantaged peers.

An analysis of data from several well-known studies by Stanford University sociologist Sean Reardon found that "the gap between children of families from the lowest and highest quartiles of socioeconomic status is equal to roughly three to six years of learning on reading tests" (The Annie E. Casey Foundation, 2013, p. 5). The report also asserted that the achievement gap between high- and low-income students is almost twice as large as the black-white achievement gap (Duncan & Murnane, 2011). These assertions should alert educators to the importance of recognizing students in poverty and targeting assistance to meet their needs. While poverty is only one of several factors that have been proven to impact student reading success, these statistics are a call to action.

Factors that contribute to third grade reading proficiency, according to The Annie E. Casey Foundation (2013) are school readiness, school attendance, summer learning, family support, and high-quality teaching in home, community, and school settings. While some of these factors seem out of schools' control, others are within the realm of possibility. High-quality teaching in school settings, for example, is completely within the school's control. With appropriate assessments, research-based programs, and high-quality instruction, schools have the potential to improve reading outcomes for students. It is important to first assess students

effectively in order to meet them where they are educationally. Once a proper assessment has been made, the high-quality instruction can begin.

In Tennessee, RTI² is the framework used to ensure all students have access to high quality instruction and intervention (Tennessee Department of Education, 2015). The foundation is strong Tier I instruction in the general education setting. This is where students spend the majority of their day receiving high quality standards-based instruction from a general education teacher (Tennessee Department of Education, 2015). Once assessed, students who show deficits in specific areas of reading or math may be provided with research-based targeted instruction in Tier II or Tier III by a trained interventionist in a small group setting. RTI² is flexible as well, meaning that once students' skill deficits are addressed and students no longer demonstrate the need for tiered intervention, they may continue in the Tier I setting and receive enrichment instruction during that time (Tennessee Department of Education, 2015).

Response to Intervention

In 2002, President George W. Bush signed the *No Child Left Behind Act* (NCLB) into law in hopes of improving educational outcomes for all students in the United States and addressing some of the inequalities (Ferguson, 2016). In 2015, Congress reauthorized the *Elementary and Secondary Education Act* (ESEA), which was formerly known NCLB. The new statute is called the *Every Student Succeeds Act* (ESSA) and contains comparable requirements for states in terms of academic intervention and research-based programs to help close the achievement gap among subgroups and help the country's most struggling students (Ferguson, 2016).

RTI programs have been developed and implemented in states as a result of these mandates. RTI was initially endorsed in the 2004 reauthorization of the *Individuals with*

*Disabilities Ac*t, or IDEA (Barton & Stepanek, 2009). Because of this, it is often confused as simply a special education framework. However, because RTI has met the requirements for NCLB and now ESSA, it has widely been utilized as an effective method for serving all struggling students, regardless of their learning disability status (Barton & Stepanek, 2009). Approximately 15 states require RTI to be utilized, while the majority of states either recommend RTI but do not require it or mandate interventions that address the core characteristics of RTI but with variance (Zirkel, n.d.). RTI is founded on the notion that schools should not wait until students fall far enough behind to qualify for special education to provide them with the help they need. Instead, schools should provide RTI interventions to students as soon as they start to struggle academically (Buffam et al., 2010). This can be addressed with a multitude of frameworks, but RTI seems to be the most widely chosen and adopted (Zirkel, n.d.).

Effective RTI programs contain several essential components (Fuchs & Fuchs, 2006). First, the intervention program must focus on success for all students with a tiered model of instructional support based on students' individual needs. Next, there must be a system in place to regularly screen students to determine who needs additional support. Once that is in place and students have been identified, there must be evidence of research-based practices for instruction and intervention. These practices must be present at each level of instruction and intervention and must be delivered with fidelity. In addition, there must be a system in place for monitoring the progress of students receiving this intervention in order to determine if it is improving student outcomes. Finally, the RTI program must include communication with a team of educators who use data to make decisions regarding programming and support for all students.

One common feature of all Multi-Tiered Systems of Support (MTSS) such as RTI is the reliance of research-based, state-approved screening tools to identify students at-risk in reading

and mathematics (Coyne et al., 2018). Educators then fine-tune the results from those screening tools to determine in which specific basic skills each individual student needs intervention. In Tennessee, their RTI2 Framework (2015) provides percentiles as guides for schools when determining how many students will need intervention. For example, almost half of Tennessee's students are not on grade level in reading and math by the time they complete third grade (Stone, 2016). However, it is difficult for schools to provide targeted intervention to half of their student body. To manage this issue, the RTI² Framework (2015) suggests that 80-85% of students should have their needs met in the general classroom, also referred to as Tier I, through high-quality, research-based, general education instruction.

In addition to Tier I instruction, the framework suggests that extra instruction in the form of Tier II interventions should be provided to 10-15% of students who have been identified as "at-risk" in basic mathematics and reading skills. Finally, the framework suggests that only three to five percent of students should be either significantly below grade level in basic mathematics and reading skills or have been participating in Tier II instruction for a period of time without progress. These students should then be served through Tier III interventions, which are more intensive than Tier I or Tier II interventions. If these interventions are provided for an appropriate length of time, and the student fails to make adequate progress toward benchmark goals, a possible referral for a learning disability is then considered (Stone, 2016).

One issue that commonly arises when schools screen their students is how to choose which students to serve when resources are limited. As Stone (2016) reports, almost half of Tennessee's students are not on grade level in reading and math by the time they complete third grade. However, a school in Tennessee may only have the resources and personnel to serve the percentages recommended by the state for Tier II and Tier III intervention, 10%-15% and three

to five percent, respectively. If the state recommends 20% of students receive intervention but the universal screening tool reports 50% of students qualify for intervention, who actually receives the intervention when all is said and done? This is where the RTI² team comes in to make decisions. The team typically consists of teachers, administrators, an RTI² coordinator, and possibly school counselors, school psychologists, special education staff, and others who work with students receiving intervention services (Tennessee Department of Education, 2015). The team will use data to guide its decisions to determine which students will receive the most benefit from intervention at that time.

Now that RTI has been in effect for nearly two decades and has been widely adopted, many are asking if it has been effective. The reality is that because RTI has been mandated by many states, districts are required to pour resources into these programs that were once used in other areas. For example, many teacher assistants or kindergarten assistants have now been reassigned as interventionists, charged with implementing these research-based reading and mathematics programs to students who demonstrate skill deficits (Tennessee Department of Education, 2018). The approved instructional programs are expensive, and school budgets have been reallocated in order to purchase RTI² programs and materials (Tennessee Department of Education, 2018).

In addition to the financial strain that RTI² has caused school districts, teachers report that lack of time is a common problem with RTI² (Tennessee Department of Education, 2018). School schedules have been crunched in order to provide the required time each day for these interventions. Some teachers in Tennessee report that adding one or two 45- to 60-minute intervention periods during the school day means that there is less time for Tier I reading, mathematics, science, social studies, or teacher planning (Tennessee Department of Education,

2018). It is no wonder why districts might be interested in knowing whether all of the time, money, and staff that has been reallocated to RTI in recent years is making any difference in students' academic achievement.

The current research on this issue seems to be mixed. For example, *Education Week* published an article titled, "RTI Practices Fall Short of Promise" (Sparks, 2015), which indicated that RTI was not tremendously effective for students who have fallen behind in reading and mathematics. On the other hand, some studies have shown that students who received Tier II or Tier III intervention grew more on standardized assessments such as the SAT-10 than their peers who did not receive the intervention (Baker et al., 2015). Gersten et al. (2017) wrote an article about a national RTI evaluation that was completed in 2015. They found that the results did not suggest that reading intervention was either completely ineffective or effective. A different study found that tiered reading intervention had a statistically significant effect on phonemic awareness and word decoding but not on reading fluency and comprehension (Coyne et al., 2018).

To muddy the waters even further, a recent study has shown that students' growth may be nonlinear, meaning that students who regress or do not show immediate growth during or after targeted intervention may continue to improve afterward (Van Norman & Parker, 2016). While another study indicated that early intervention may have an impact on students' long-term achievement outcomes, whether or not they saw positive short-term results (Grapin et al., 2019). These studies make decision-making difficult for schools and districts because there are so many factors that contribute to student learning and achievement.

Tier I Instruction

Approximately 50% to almost 80% of fourth graders continue to perform below proficiency in reading, according to state and national assessments (Paige, 2018). In Tennessee

specifically, almost half of students are not on grade level in reading and math by the time they complete third grade (Stone, 2016). While RTI programs aim to close the achievement gap of these students, it may not be realistic to expect schools to provide intervention services to more than half of their student population. The RTI² framework in Tennessee recommends small group teacher-to-student ratios of one teacher to five students in Tier II in elementary school and one teacher to three students in Tier III in elementary school (Tennessee Department of Education, 2015). With school budgets already strained (Tennessee Department of Education, 2018), adding the personnel required to meet this need is improbable.

Moreover, the RTI² Framework (Tennessee Department of Education, 2015) suggests that 80%-85% of students should have their academic needs met in the general classroom, or Tier I, through high-quality, research-based, general education instruction and that extra instruction in the form of Tier II or Tier III interventions should only be provided to approximately 20% of students who have been identified as the most "at-risk" in basic mathematics and reading skills. Researchers suggest that students' overall reading achievement cannot improve through intervention efforts alone and that strong core instruction in the general classroom setting is crucial to providing students with the necessary foundational reading skills to increase fluency and comprehension (Paige, 2018). Swanson et al. (2017) assert that "the success of a multi-tiered framework begins with establishing school-wide, high-quality general classroom instruction via professional development in evidence-based instructional procedures and classroom support from instructional leaders" (p. 1640).

In order to provide teachers with high-quality professional development that addresses effective Tier I reading instruction in the classroom, effective Tier I instructional practices must first be identified (Swanson et al., 2017). For example, many state and national reading standards

expect teachers to teach other content areas through their reading instruction. In 2000, the National Reading Panel identified five essential components of effective reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Cervetti & Heibert, 2015). In 2015, Cervetti and Heibert made the case for a sixth component to be added to the list: knowledge development. This assertion was made 15 years after the initial five components were identified due to the Common Core State Standards' recommendation that teachers increase the number of informational texts being used in reading instruction to match the number of literary texts (Cervetti & Heibert, 2015). Doing this provides more opportunity for knowledge development in the content areas through effective reading instruction.

Cervetti and Heibert (2015) also make the connection that the prior knowledge that students bring to the reading classroom strongly influences their comprehension of what they read. When students have background knowledge about what they are reading, their brains can focus on making additional meaning of the new information instead of understanding the overall concept. When teachers at all grade levels increase the number of informational text readings with students, this helps to increase students' prior knowledge about content they may read about again in the future. The Next Generation Science Standards and National Council for the Social Studies standards provide guidance on incorporating reading skills within the content areas (Cervetti & Heibert, 2015). It is important to provide training to teachers in these areas so they understand how to teach reading effectively and efficiently within the content areas.

Swanson et al. (2017) completed a meta-analysis of 37 publications conducted between the years 2000 and 2015 on the effects of Tier I reading instruction on students' vocabulary and comprehension. They found that fourth through 12th graders who received Tier I instruction in reading performed better than those who did not receive Tier I reading instruction. While this

may seem obvious, it points to the importance of strong Tier I reading instruction in the general classroom setting. This could become a problem when analyzing school master schedules since RTI implementation began over the last several years. In order to provide the required time each day for Tier II and Tier III interventions, teachers in Tennessee report that adding one or two 45- to 60-minute intervention periods during the school day means that there is less time for Tier I reading, mathematics, science, social studies, or teacher planning (Tennessee Department of Education, 2018). According to Swanson et al. (2017), less Tier I reading instruction could lead to less favorable student achievement outcomes in reading comprehension and vocabulary.

Possibly the answer to increased student outcomes in reading is not in providing students with more Tier I time or more intervention time, but in maximizing the time already budgeted into the school day. Averill, Baker, and Rinaldi (2014) suggest teachers need help managing their instruction time effectively. Scheduling a school-wide intervention block is one proposed solution to this problem. A school-wide intervention block provides a designated 30- to 45-minute block of time during the day when all students are receiving intervention at the same time (Averill et al., 2014). Administrators should schedule assemblies and other interruptions outside of this intervention block to minimize distractions and maximize learning potential (Leonard, 2001).

Once the intervention schedule is in place, school personnel should take inventory of possible assessments and intervention programs that can be used to determine which students need intervention and which programs they will use to provide the actual intervention services (Averill et al., 2014). School personnel should then determine what professional development must take place in order for teachers and interventionists to deliver high-quality instruction and intervention. Once everyone is trained on the programs being utilized, school administrators

should ensure that teachers know how to collect and analyze data from student assessments in order to determine which students need intervention and which programs would benefit them the most.

Finally, school personnel must determine how to use the intervention block to best engage all students (Averill et al., 2014). Determining how to manage the students who do not qualify for Tier II or Tier III intervention services can sometimes be the most challenging part for teachers. If personnel allows, some schools may assign an additional staff member to each class in order to assist the teacher during intervention. With creative scheduling and use of instructional resources, the intervention block can result in meaningful learning opportunities for all students that is targeted to their individual needs.

Identifying Students with Learning Disabilities

RTI is not only used to provide remediation to struggling readers, it is also used in some states to identify students with a learning disability in reading, writing, or mathematics (Werts, Lambert, & Carpenter, 2009). Gersten and Dimino (2006) explain that the most commonly identified educational disabilities are learning disabilities, or LD, and the majority of students identified as LD struggle with reading. Students who demonstrate that they are at-risk for reading achievement should be served through Tier II interventions with a focus on the specific area of reading in which they struggle. Students with larger deficits may qualify for Tier III interventions, which are more intensive than Tier I or Tier II interventions. If these interventions are provided for an appropriate length of time, and the student fails to make adequate progress toward benchmark goals, a possible referral for a LD is then considered (Stone, 2016).

In the early 21st century, this new method of using RTI for determining whether or not a student had a learning disability was presented by the U.S. Department of Education (Tennessee

Department of Education, 2015). The change was essentially a response to an increase in the number of students identified as having a LD, and there was increasing national unease regarding the effectiveness of the methods and tests used to diagnose learning disabilities at the time (Arden et al., 2017). This new method for identifying students with LDs seemed more logical than the previous method of analyzing the discrepancies between IQ scores and reading achievement scores (Gersten & Dimino, 2006). In addition, states differed on their definitions of discrepancy using the old model (Werts et al., 2009). Some states required students to be a certain percentage of their age behind their peers academically in order to qualify. Others would qualify students as learning disabled as long as they were at least one half of a school year behind. Still others used standard deviations on achievement tests to determine eligibility (Werts et al., 2009). The new RTI model seemed to even the playing field regarding identification.

The new model also allowed for identification of students with a reading disability much sooner than in the past. In fact, the Office of Special Education and Rehabilitation Services commented in 2005:

> There are many reasons why the use of the IQ-discrepancy criterion should be abandoned. The IQ-discrepancy criterion is potentially harmful to students as it results in delaying intervention until a student's achievement is sufficiently low so that a discrepancy is achieved. For most students, identification as having an SLD (specific learning disability) occurs at an age when the academic problems are difficult to remediate [even] with the most intense remedial efforts. Not surprisingly, the "wait to fail" model that exemplifies most current identification practices for students with SLD does not result in significant closing of the achievement gap. (U.S. Department of Education, 2005, p. 44)

Prior to RTI, in the 1980s and 1990s, many felt that identifying a student with a reading disability in the primary grades was cruel and premature. They felt that students should be given the opportunity to develop and mature before a disability determination (Gersten & Dimino, 2006). However, with the increasing concern surrounding students not reading on grade level by the end of third grade (Sparks, 2011; Wright & Wright, 2003), some districts now feel early identification is crucial.

Another solution that the RTI model brought to the table was eliminating poor instruction as a possible reason for a student's lack of academic progress. In the reauthorization of IDEA in 2004, language was included to ensure students who received poor instruction did not qualify for special education services under the specific learning disability category (Werts et al., 2009). IDEA now requires districts to use quality research-based instructional programs in RTI in order to address this concern. The Tennessee state RTI² framework (Tennessee Department of Education, 2015) requires districts to use a "nationally normed, skills-based universal screener as part of the universal screening process" (p. 18). Then, schools should administer a survey level assessment to students who are identified as "at risk" in order to determine specific intervention needs.

The Tennessee state RTI² framework (Tennessee Department of Education, 2015) recommends intervention materials to be "differentiated, scaffolded, and targeted based on the needs of individual students as determined by current assessment data" (p. 71). It also outlines how districts can ensure the interventions are being implemented with fidelity (Averill et al., 2014). Fidelity monitoring is an important component to an effective intervention program. The accountability that self-checks or even outside observations provide helps to maintain a consistently effective instructional program (Averill et al., 2014). Throughout the intervention

process, students should be progress-monitored regularly to determine if they are responding to the interventions. If there is inadequate improvement after a pre-determined amount of quality intervention services, students may be referred for special education services (Werts et al., 2009). In addition, once a student qualifies to receive special education intervention, the student may also continue to qualify for RTI services in other subjects outside of the services outlined in the IEP (Averill et al., 2014). This ensures students' needs are being met in all academic areas.

Curriculum Based Measurement Tools

In order to ensure schools are providing RTI services to the appropriate students, they must first assess students' basic reading and mathematics skills through the use of a curriculum based measurement tool, or CBM. Because of the impact these assessment results may have on a student's programming, it is important to ensure schools have access to valid and reliable instruments. According to Yeo (2010), numerous studies over the past 25 years have demonstrated that CBM probes are valid and reliable indicators of student performance. CBM reading measures are fairly inexpensive and are easy to administer, which are selling points to school districts in need of such assessments.

In addition, studies have shown a strong correlation between CBM and statewide achievement tests (Yeo, 2010), which has become increasingly important as the nationwide focus on school accountability continues to rise. For example, Florida researchers used a commonly-administered CBM, the DIBELS oral reading fluency assessment, for predicting performance on the reading components of the Florida Comprehensive Assessment Test (FCAT) and SAT-10. The three assessments were given concurrently, and researchers reported correlations in the .70-.71 range (Roehrig et al., 2008).

CBM includes a set of short, standardized probes that measure basic skills in reading, mathematics, and written expression (Shapiro, 2011). CBM reports specific skill deficit areas and may also be used to compare students to a nationally-representative sample of their same grade peers for reference (Shinn, 2008). CBM can be used as a universal screener to determine which students are at-risk in specific areas, and it can also be used to monitor progress during and after interventions have been implemented to show student progress over time (Howell & Nolet, 2000). In the state of Tennessee, AIMSweb, STAR, and easyCBM are the most commonly utilized CBM programs with nearly 90% of districts using one of these three programs (Tennessee Department of Education, 2018-a).

EasyCBM is a CBM tool similar to DIBELS. It is available in English for students in kindergarten through eighth grade and in Spanish for students in kindergarten through second grade. Over 425,000 educators across the United States use EasyCBM, and approximately four million students have participated in EasyCBM assessments (University of Oregon, 2014b). One benefit of EasyCBM is that it can be administered online, which allows for easy reporting and data access for educators (University of Oregon, 2016). EasyCBM uses scores from all students who complete each assessment to develop norms (Saven, Tindal, Irvin, Farley, & Alonzo, 2014). Scores above the 50th percentile indicate students at low risk. Scores between the 10th and 50th percentile indicate some risk, and scores below the 10th percentile indicate high risk (University of Oregon, 2016). EasyCBM costs school districts approximately four dollars per student per year. This annual license provides districts with unlimited access to benchmark results for all students multiple times per year as well as easy-to-read online reports that make it easy to progress-monitor students and assess student growth.

High Stakes Testing

Assessing student achievement is not a new fad. In fact, the first American achievement test dates back to the nineteenth century (Haladyna, Haas, & Allison, 1998), and standardized testing worldwide can be traced all the way back to the 3rd century BCE in China (Himlefarb, 2019). The achievement tests of the past were used mainly to assess an individual's capabilities, such as an IQ test. These tests could then be used to determine whether a child needed support in learning and development (Shepard, 2016). Achievement tests to measure what students were learning in school came along in the late 1800s as well (NEA, 2017). Teachers wrote their own assessments to help prepare their students for college. The establishment of the College Entrance Examination Board allowed for a single exam to be used for this purpose. Thus, the era of standardization began.

Now, standardized tests are the norm rather than the exception. Students take multiple standardized assessments in any given school year. Standardized assessments are exams that are administered to a large number of students (Mertler, 2002). Students all take the same assessment using standardized testing conditions and instructions in order to maintain the credibility of the assessment. Results of these assessments are reported in a standardized way using the same scale and reporting terminology.

Standardized testing has become big business in the United States over the last few decades. In 1997, approximately $260 million was paid to major test publishers each year. In 2008, that amount grew to approximately $700 million (Supovitz, 2009). In 2012, states spent more than $1.7 billion on standardized tests (Ujifusa, 2012). This spending calculates to approximately $65 per student on average. Many people are opposed to these assessments for various reasons (Ujifusa, 2012). Opponents argue that standardized assessment results in the

United States have been historically used to “weed out students and eliminate them from further education opportunities” (Haladyna et al., 1998, p. 262). Some say that students spend too much time testing, leaving little time to actually learn the material. Others say that teachers are forced to teach to the test, meaning they no longer teach any untested, yet potentially important, material (Haladyna et al., 1998). It seems that the majority of the opposition, however, lies in how the test results are being used. The accountability that comes along with these assessments is the source of much of the dissention.

In 2002, President George W. Bush signed NCLB into law. While the goal was to improve the American educational system, some argue that it has done the opposite. Due to this law, and its successor ESSA, educators are required to test students each year, beginning in third grade. This practice is also known as high-stakes testing because of the consequences attached. These test results determine whether students are promoted to the next grade and to what courses they are assigned. They can determine whether students graduate from high school or are admitted into college (Mertler, 2002). At the teacher level, they may determine how many formal teaching observations a teacher must receive or, in some cases, how much teachers are paid. These scores are also often factored into teacher tenure decisions, and in some cases, teachers’ contract renewals. Schools and districts can be targeted as poorly performing based on these assessment results, which can then be reported to the public, casting a shadow on any other positive achievements happening outside of standardized testing (Jacob, 2005).

In 2005, 25 states linked student graduation to performance on state or district assessments, 18 states rewarded teachers based on exceptional student performance on these assessments, and 20 states punished schools or teachers based on poor student performance (Jacob, 2005). The sanctions have become more widespread in recent years. While many

educators disagree with associating rewards and punishments with state assessment results, the reality is that many state accountability laws contradict their views. The stakes are high, so it is understandable why districts may constantly try to improve their scores.

In addition to opposition to rewards and punishments being linked to standardized test scores, many educators, parents, and community stakeholders have voiced concern over the time students and teachers are required to spend participating in these state assessments (Tennessee Department of Education, n.d.-c). In Tennessee, the Department of Education actually decreased the required minutes of testing in 2018 due to these voiced concerns. However, third graders still were required to test for 180 minutes in English Language Arts, 115 minutes in Math, and 50 minutes in Science in 2019 (Tennessee Department of Education, n.d.-c). This equals almost six hours of testing for the youngest participants of the Tennessee Comprehensive Assessment Program (TCAP). Some students with disabilities and English Language Learners qualify for additional time according to state regulations. In the state of Tennessee, additional time is up to double the required minutes (Tennessee Department of Education, n.d.-c). This means that third grade students who qualify for additional time tested up to 12 hours in 2019, and this is after the State Department of Education lowered the number of testing minutes required. Based on this information, it is no surprise that many teachers and parents are concerned about these state assessments.

Growth Scores

In response to the testing and accountability requirements of NCLB and ESSA, states and districts have examined existing testing practices and made changes to how tests are administered and how scores are reported (Amrein-Beardsley & Holloway, 2019). In the early days of NCLB, the focus was on the percentage of a school or district's students scoring

proficient on their state's standardized assessment. Essentially, they were measuring how many students passed the test. One problem with using this sole measurement, however, is that simply reporting how many students essentially passed the test does not give a complete view of student achievement. It does not report how much each student learned or grew during the school year, just whether each student scored proficient on the exam. Furthermore, reporting only the percentage of students scoring proficient does not measure achievement gaps among subgroups of students, which was and is a focus of NCLB and ESSA (National Research Council, 2010). Historically, students in certain subgroups such as economically disadvantaged or students with disabilities have scored lower than their more privileged or non-disabled peers on standardized assessments, and districts receive funding specifically aimed at closing these achievement gaps (Brookhart, 1993).

In 2007, researchers asked the general public, "In your opinion, which is the best way to measure the school's performance - by the percentage passing the test or the improvement shown by the students longitudinally?" Eighty-two percent responded that the best way to measure a school's performance was to measure student growth over time (Rose & Gallop, 2007). At the time, there was not a widely accepted growth model by which to measure student, school, and district growth on standardized assessments. That soon changed.

Value-added growth models are designed to measure the impact, or value, a teacher has on a student's learning each school year, indicating how much a student has "grown" from one year to the next. Value-added models control for students' previous testing history as well as demographic variables that might factor into test scores. These may include economic status, race, primary language, attendance, discipline, and special education status, among other factors (Amrein-Beardsley & Holloway, 2019). In 2016, during the passage of ESSA, 44 states had

adopted value-added models for their teacher evaluation policies (Amrein-Beardsley & Holloway, 2019). Tennessee was one of those 44 states.

In Tennessee, Dr. William L. Sanders developed a value-added model of assessment that addressed ESSA's requirement of utilizing a value-added model for teacher evaluation. However, he did not develop this model for the explicit purpose of teacher evaluation (Sanders, 2006). He started testing his value-added model at the University of Tennessee, Knoxville in the 1980s. Dr. Sanders used a mixed-model statistical methodology to develop his value-added model (Sanders, 2006). Because of the success his model has shown over time, the state of Tennessee has adopted his model, also known as the Tennessee Value Added Assessment System (TVAAS), for its assessment reporting and accountability (Sanders, 2006). TVAAS is described as a statistical system for educational results assessment which uses measures of student achievement in order to estimate statistical distributions of a teacher, school, and school district (Koretz, 2001). TVAAS is currently the most widely known value-added model in the United States, but many other states and school districts have followed suit in piloting, adopting, or developing growth or value-added assessment models (McCaffrey & Hamilton, 2007).

While value-added scores are increasingly becoming the primary method for assessment reporting and accountability, researchers argue that there are several problems with using gain scores to determine the effectiveness of an educational program (Gall, Gall, & Borg, 2007). For example, there is an assumption of equal intervals when using gain scores, but many educational assessments are not scored in this way. While the TVAAS calculations are more sophisticated than this, EasyCBM passage reading fluency assessment reports are expressed as raw scores of correct words per minute. Therefore, this study did not attempt to calculate raw gain scores but

compared post-test achievement scores of each to determine whether a correlation existed between the two.

Summary

NCLB and the ESSA have brought about an intense focus on standardized assessment and accountability in recent decades in the United States. Since Tennessee's legislature mandated the use of a multi-tiered intervention system in 2014 as an attempt to meet these federal requirements, a tremendous amount of resources have been allocated to fulfilling this mandate at the district level by way of interventionists' salaries, RTI coordinator positions, research-based program costs, and time taken from core instruction in the general education setting. Several recent research studies have presented mixed reviews of the effectiveness of RTI interventions in reading, which causes stakeholders to wonder whether all of the time and money districts have been pouring into RTI over the last several years are truly impacting student growth and achievement in a positive way.

Because schools are already required to assess students in grades three and higher on the state's standardized assessment, and because these scores are used to make so many educational decisions at the state, district, school, and student levels, educators are constantly searching for ways to estimate their students' assessment scores prior to the state examination so they know on what to reteach and focus prior to the state's annual assessment window. Because the state of Tennessee reports its state assessment scores using TCAP scores, it makes sense that educators might seek to understand how their students are performing academically throughout the year to prepare for the state assessment in the same way. Students in the state of Tennessee participate in universal screening using a CBM tool three times per year. If CBM growth scores correlated to

TCAP scores, Tennessee educators could use these reports of student progress to inform instruction prior to the state examination in the spring.

CHAPTER THREE: METHODS

Overview

This correlational research drew participants from a convenience sample of third through fifth graders who participated in both the May 2019 EasyCBM Passage Reading Fluency assessments and the 2019 summative Tennessee Comprehensive Assessment Program (TCAP) in English Language Arts. The instruments used were the EasyCBM Passage Reading Fluency and TCAP English Language Arts assessments. Archival data from these two assessments were gathered and analyzed to determine a possible relationship.

Design

For this research study, a correlational research design was used to determine if a statistical relationship existed between EasyCBM Passage Reading Fluency assessment results and TCAP English Language Arts results. Pearson coefficient correlations were conducted using EasyCBM Passage Reading Fluency assessment results as the independent variable and TCAP English Language Arts results as the dependent variable. A correlational design was appropriate for this study since its purpose was "to measure the degree and direction of the relationship between two or more variables and to explore possible causal factors" (Gall et al., 2007, p. 336). Pearson correlations were computed four times, once overall and then once for each grade level's data, to address each research question separately. Bonferroni corrections were used since several statistical tests were performed simultaneously in order to protect against possible Type I errors.

Research Questions

RQ1: Is there a relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ2: Is there a relationship between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ3: Is there a relationship between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ4: Is there a relationship between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypotheses

$H_0$1: There is no statistically significant correlation between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

$H_0$2: There is no statistically significant correlation between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

$H_0$3: There is no statistically significant correlation between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

H_04: There is no statistically significant correlation between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

Participants and Setting

The participants for the study were drawn from a convenience sample of third through fifth grade students from a single elementary school located in southeastern Tennessee during the 2018-2019 school year. The school district was located within a middle-income suburb outside of a growing metropolitan area. The students attended a public elementary school that served approximately 375 students in grades three through five. Student demographics of the school included 52.8% male and 47.2% female, as well as 35.7% economically disadvantaged, 10% English language learners, and 15.2% students with disabilities. Racial demographics included Caucasian (58.8%), African American (13.1%), Hispanic (21.5%), Native American (0.3%), and Asian (6%) students (Tennessee Department of Education, n.d.-a). Participants for the study were students who were tested on both the end-of-year TCAP in April 2019 and the EasyCBM Passage Reading Fluency assessment in May 2019.

The number of participants sampled was 340, which exceeded the required minimum for a medium effect size. According to Warner (2012, the number of participants required for a medium effect size with the statistical power of 0.95 at the 0.05 alpha level is 255. The sample came from one elementary school in the district. Students were selected from 16 general English language arts classes. The English language arts classes included instruction in reading fluency, reading comprehension, vocabulary, grammar, and writing to third, fourth, and fifth grade students.

Instrumentation

One of the instruments used in this study was the EasyCBM Passage Reading Fluency Assessment. The EasyCBM system was developed by educational researchers at the University of Oregon (2014b). It was designed to identify students who may need additional instructional supports in the areas of math and reading. EasyCBM was published in 2006, and since that time over eight million dollars of federal funding have been used to support and refine the program (University of Oregon, 2014b). By 2014, approximately four million students had taken over 26 million EasyCBM assessments across the world (University of Oregon, 2014b).

During the development of EasyCBM assessments, several methodologies were used. For example, Rasch modeling, which is connected to item response theory, was used to provide information on the difficulty and fit of each individual test item. In addition, analyses of variance, or ANOVAs, were conducted to align the passage difficulties of each test form (University of Oregon, 2014a). This process ensured that items were appropriate and consistent for EasyCBM's intended use.

The assessment system has also been proven reliable through internal consistency, alternate form, and test-retest reliability. Internal consistency has been measured using Cronbach's alpha, alternate form reliability has been evaluated with standard Pearson's bivariate correlations, and test-retest reliability has been evaluated by giving students the assessments within a short time frame and then measuring the correlation of the test results. In addition, criterion validity and construct validity have been evaluated, with construct validity being evaluated through latent factor analyses. Specifically, on the Passage Reading Fluency assessment, alternate form reliability figures range from .94-.95 in a study of third grade test administrations (University of Oregon, 2014a). Studies of alternate form reliability in other

grades ranged from .83-.98. Test-retest reliability figures from grades one through five ranged from .83-.98, indicating a very strong relation.

EasyCBM scores range from zero (low) to 100 (high) and are reported as a national percentile. Zero to the 10th percentile is considered high risk, the 11th through the 25th percentile is considered some risk, and the 26th through 100th percentile is considered low risk. Norms were nationally stratified in 2014 to best characterize reading performance across the country, representing each region of the United States as well as race, ethnicity, and gender (University of Oregon, 2014a). Scores are also reported as words correct per minute for the purposes of showing growth in reading fluency. For example, norms for third grade passage reading fluency in the fall are as follows: 47 words per minute equals the 10th percentile, 68 words per minute equals the 25th percentile, 87 words per minute equals the 50th percentile, 112 words per minute equals the 75th percentile, and 138 words per minute equals the 90th percentile. Expectations for these norms increase as the school year progresses (University of Oregon, 2014a).

During the Passage Reading Fluency assessment, students read from a passage for one minute. The students read a grade level passage out loud, and there is one reading passage per grade level. The students are scored based on how many correct words they read during the one minute. Those scores are also converted to national percentiles (University of Oregon, 2014a). This instrument was appropriate because it is the progress monitoring tool used by the study's participants to measure progress in reading fluency.

The second instrument that was used in this study is the Tennessee Comprehensive Assessment Program (TCAP) in English Language Arts. The specific TCAP assessment is called TNReady, which has four parts in English Language Arts. Part one is a writing assessment containing one written response question, and parts two through four have 28-47 multiple choice

and short answer questions that are based on Tennessee State Standards in English Language Arts. The scores are reported as scale scores ranging from 200 to 450, and those scale scores are divided into four performance levels for reporting purposes (Tennessee Department of Education, n.d.-b). TNReady has different performance level cut scores each year, but the performance level names remain the same, reported as below, or level one; approaching, or level two; on track, or level three; and mastered, or level four. Levels three and four scores are considered on grade level (Tennessee Department of Education, n.d.-b).

All public schools in the state of Tennessee are required to administer the TCAP assessment each year in grades three through 12. There are 146 school districts in Tennessee with 1,749 public schools serving approximately 975,000 students (Tennessee Department of Education, n.d.-a). In third grade in 2018, the average scale score range for level one was 200 to 321, the average scale score range for level two was 322 to 358, the average scale score range for level three was 359 to 390, and the average scale score range for level four was 391 to 450 (Tennessee Department of Education, 2018). In fourth grade in 2018, the average scale score range for level one was 200 to 298, the average scale score range for level two was 299 to 342, the average scale score range for level three was 343 to 378, and the average scale score range for level four was 379 to 450. In fifth grade in 2018, the average scale score range for level one was 200 to 295, the average scale score range for level two was 296 to 332, the average scale score range for level three was 333 to 370, and the average scale score range for level four was 371 to 450. According to the TCAP Achievement Technical Bulletin for 2017-18, test score reliability for grades three through five English Language Arts was between 0.88 and 0.92 (Tennessee Department of Education, 2018-b).

Previous peer-reviewed studies have used TCAP to compare student achievement and analyze its correlation with other assessments (Miller, Bell, & McCallum, 2015). Additionally, studies have used CBM tools, but the researcher had not found studies that used EasyCBM specifically. This research study may help inform school districts in the state of Tennessee that use EasyCBM to identify students in need of reading intervention and use EasyCBM to progress-monitor students' growth in reading throughout the school year.

Procedures

First, the researcher received permission to conduct research within the school district and school (see Appendix A). Institutional Review Board (IRB) approval was then sought and obtained (see Appendix B). Participants for the study were students who participated in both the end-of-year TCAP in April 2019 and the EasyCBM Passage Reading Fluency assessment in May 2019. Archival data from EasyCBM Passage Reading Fluency assessments from May 2019 and TCAP English Language Arts achievement data from April 2019 was collected from the school district, and a district employee from the school system stripped the data of student names before providing it to the researcher. Data was recorded as correct words per minute on the EasyCBM Passage Reading Fluency assessment and performance levels one through four, with levels one and two indicating below grade level expectations and levels three and four indicating at or above grade level expectations, for TCAP English Language Arts.

Data Analysis

An Excel file with data from EasyCBM and TCAP was imported into the Statistical Package for the Social Sciences (SPSS). Scatterplots were produced. Pearson correlations were conducted using the scores of the independent variable (May 2019 EasyCBM Passage Reading Fluency correct words per minute) and the dependent variable (2019 TCAP English Language

Arts performance levels) to measure the extent to which the variables correlated. This was completed four times, once overall and then once for each grade level's data, to address each research question separately. Data screening was conducted to check for missing data, and preliminary analyses were run to check for violations of the assumptions of normality, linearity, and bivariate normal distribution. Due to a large sample size, $N = 329$, the researcher used the Kolmogorov-Smirnov test to check for normality at the .05 alpha level along with histograms for each data set. Box plots and scatter plots were used to check the assumptions of bivariate outliers, linearity, and bivariate normal distribution. Bonferroni correction was used since several statistical tests were performed simultaneously. Due to Bonferroni correction and the testing of four null hypotheses, the researcher used an alpha level of .0125 (two-tailed) (Warner, 2013).

CHAPTER FOUR: FINDINGS

Overview

The purpose of this quantitative research study was to determine the relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP). A correlational research design was used, and Pearson correlation coefficients were analyzed to determine the strength of the relationships between these assessments for students in third through fifth grades. The relationship between these two assessments had not been previously studied. Archival data was used in this study to provide insight into the connection between these two literacy assessments.

Research Questions

This study investigated the following research questions:

RQ1: Is there a relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ2: Is there a relationship between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ3: Is there a relationship between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

RQ4: Is there a relationship between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypotheses

$H_0$1: There is no statistically significant correlation between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

$H_0$2: There is no statistically significant correlation between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

$H_0$3: There is no statistically significant correlation between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

$H_0$4: There is no statistically significant correlation between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP).

Descriptive Statistics

The participants for this study were third through fifth grade students from one elementary school in one suburban school district in southeast Tennessee with a total school enrollment of 375 students. Student demographics of the school include 52.8% male and 47.2% female, as well as 35.7% economically disadvantaged, 10% English language learners, and 15.2% students with disabilities. Additional demographics included Caucasian (58.8%), African American (13.1%), Hispanic (21.5%), Native American (0.3%), and Asian (6%) students (Tennessee Department of Education, n.d.-a). Of the total school population, 35 students did not participate in both the EasyCBM and TCAP assessments, so the data set of EasyCBM passage reading fluency scores and TCAP English language arts scores included a sample of 340

students. Eleven participants' data were removed from the data set as outliers reducing the total participants to 329 (N = 329). Means and standard deviations were obtained for the independent variable (EasyCBM passage reading fluency scores) overall and then broken down by grade level, and can be found in Table 1. Means and standard deviations for the dependent variable (TCAP English Language Arts achievement levels) overall and then broken down by grade level can be found in Table 2.

Table 1

Descriptive Statistics of Independent Variable

Variable	*N*	Mean	*S.D.*
Easy CBM passage reading fluency words per minute	329	138.57	43.116
Easy CBM passage reading fluency words per minute 3rd grade	118	114.71	35.283
Easy CBM passage reading fluency words per minute 4th grade	113	140.38	43.357
Easy CBM passage reading fluency words per minute 5th grade	98	165.20	34.654

Table 2

Descriptive Statistics of Dependent Variable

Variable	*N*	Mean	*S.D.*
TCAP English language arts achievement level	329	2.30	.886
TCAP English language arts achievement level 3rd grade	118	2.47	.958
TCAP English language arts achievement level 4th grade	113	2.28	.829
TCAP English language arts achievement level 5th grade	98	2.11	.823

Results

Assumption Tests

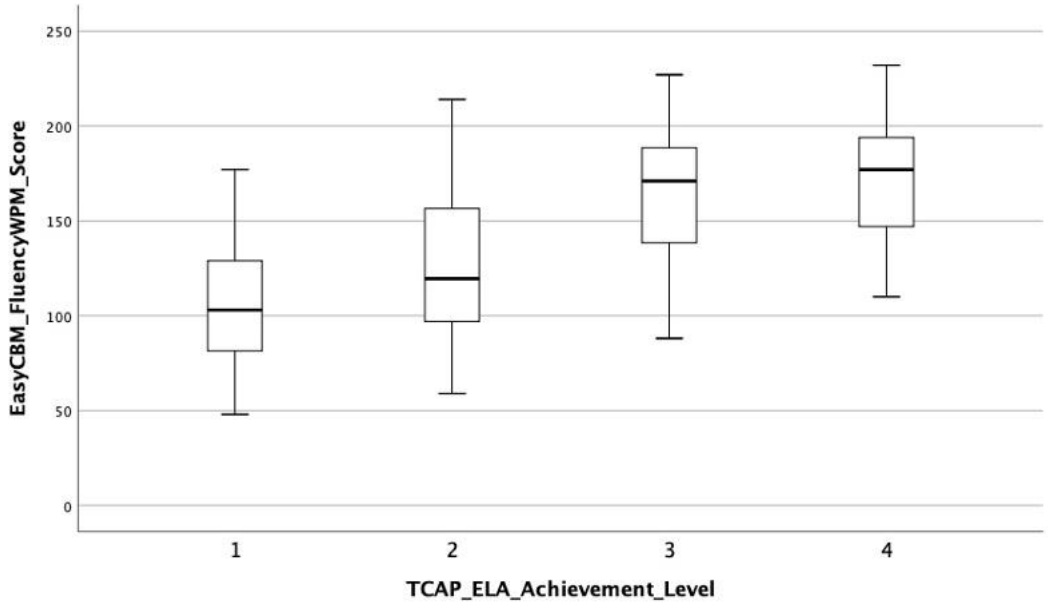
Screening was conducted to check for missing data and outliers among the independent and dependent variables. Data errors and outliers were identified with the procedures recommended by Warner (2013). No missing data was detected. Box plots were used to detect outliers for the independent and dependent variables (Warner, 2013) (see Figures 1-4 for box plots). Eleven participants' data (29, 67, 121, 122, 150, 155, 218, 256, 271, 273, and 311) were removed from the data set as outliers.

Pearson's *r* was used to test the four null hypotheses. Pearson's *r* required that five assumptions were met: independence, normality, linearity, bivariate normal distribution, and bivariate outliers (Warner, 2013). For the assumption of independence, the scores for both the dependent and independent variables were independent for each case (Warner, 2013). Normality was then examined for each variable using Kolmogorov-Smirnov's test of normality. The assumption for normality was found tenable for third grade (p = .170), fourth grade (p = .079), and fifth grade (p = .200) but not tenable for the overall data (p = .002) at the .05 alpha level for each independent variable. The assumption for normality was found not tenable (p = .000) for third grade, fourth grade, fifth grade, and the overall data at the .05 alpha level for each dependent variable. Because of this, the researcher ran a series of histograms, and decided to continue with the analysis using Pearson's *r* after a visual inspection. For the assumption of linearity, the linear relationship between the independent variable and the dependent variable was examined using scatter plots, and no curvilinear plots were identified. Therefore, the assumption of linearity was acceptable (Warner, 2013). The assumptions of bivariate normal distribution and bivariate outliers were found tenable after a visual examination. See Figure 1 for

the box plot for the overall TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 1

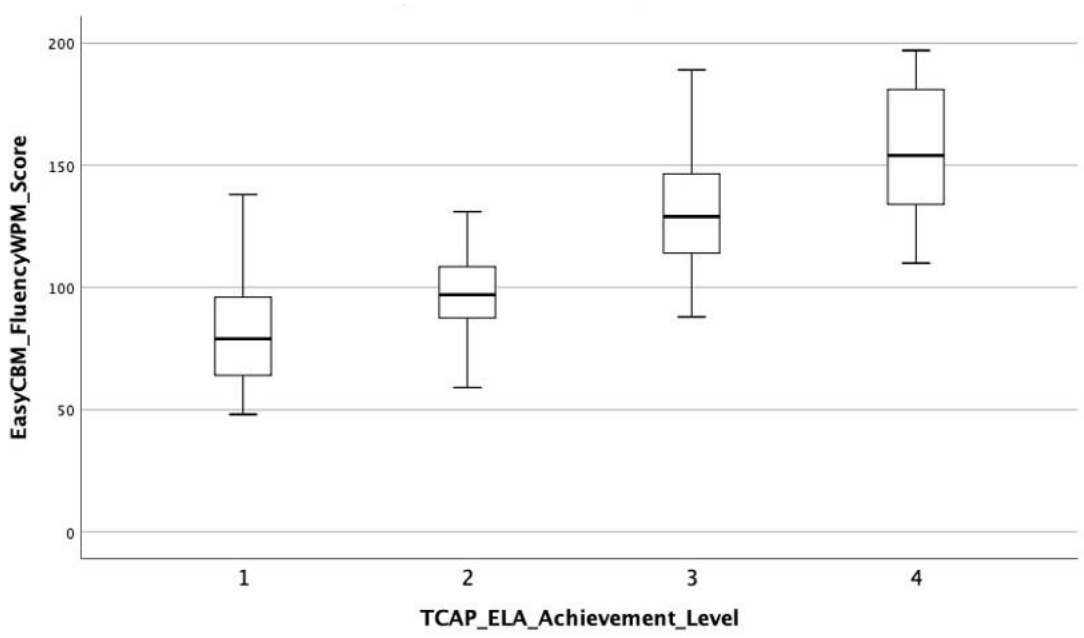
Box Plot Overall



See Figure 2 for the box plot for the third grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 2

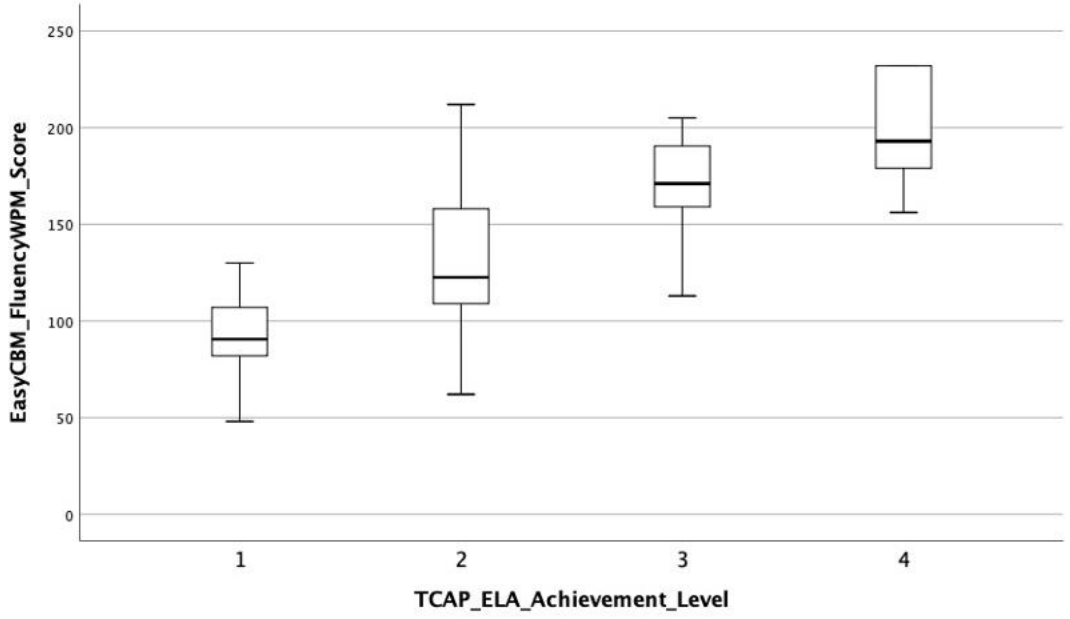
Box Plot Third Grade



See Figure 3 for the box plot for the fourth grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 3

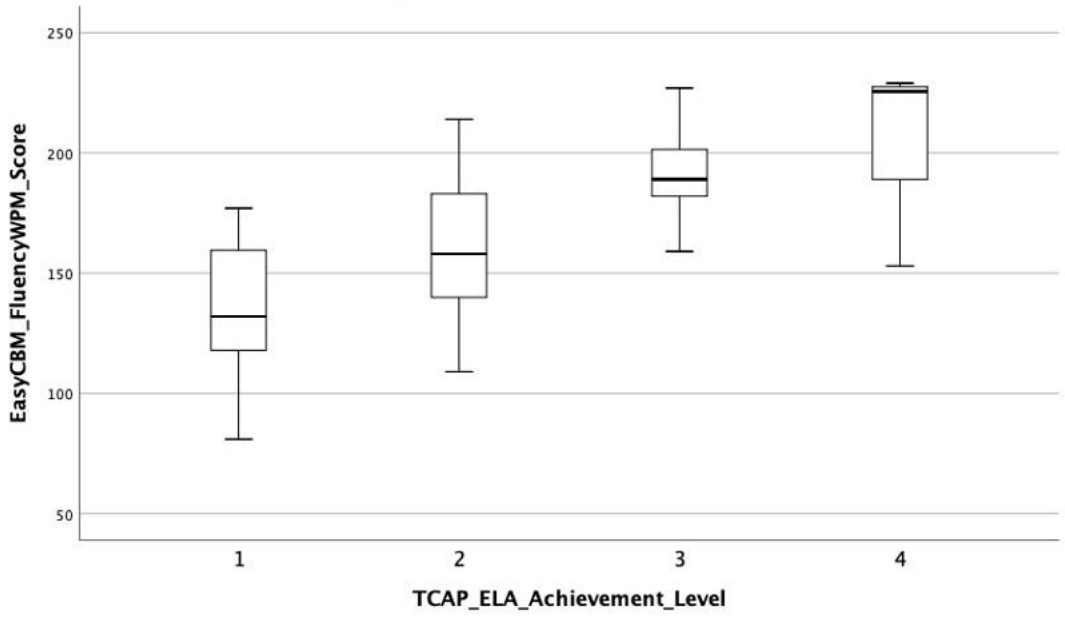
Box Plot Fourth Grade



See Figure 4 for the box plot for the fifth grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 4:

Box Plot Fifth Grade



Statistical Analysis

Pearson correlations were used to test the four null hypotheses at the .05 alpha level. In order to help protect against a Type I error across the four correlations, a Bonferroni correction was used (PCalpha = EWalpha/k or PCalpha = .05/4 = .0125), and the alpha level was adjusted to .0125 to account for this correction (Warner, 2013). This conservative testing method provides a probability threshold to control the occurrence of false positives when testing multiple hypotheses.

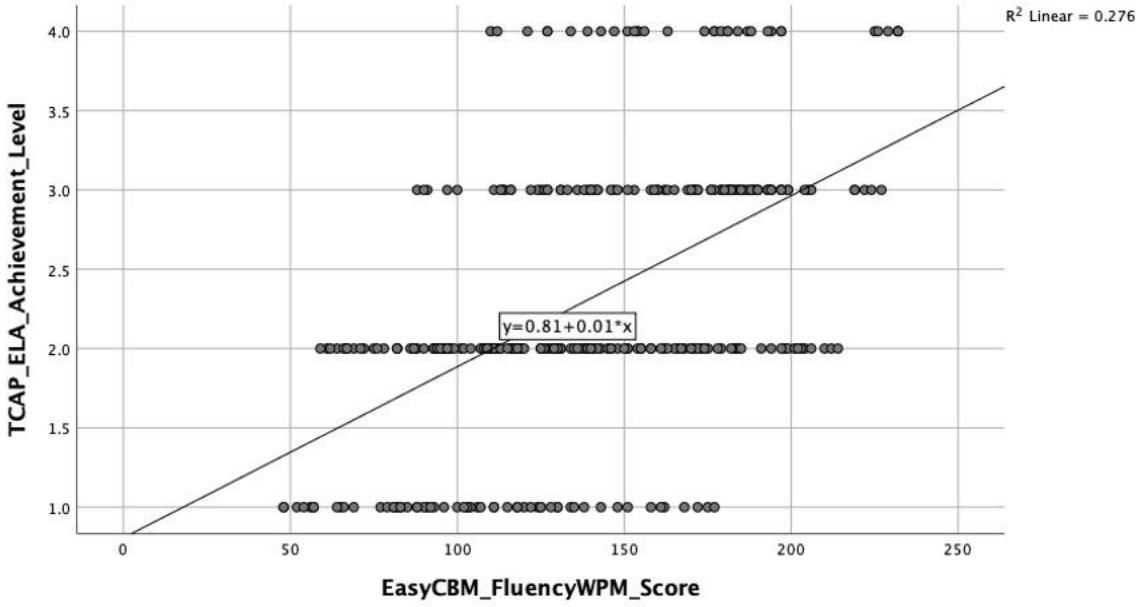
Null Hypothesis One

For hypothesis one, the researcher examined if there was a relationship between TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores for

all participants, regardless of grade level. The researcher found a statistically significant relationship between overall TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. Therefore, the researcher rejected the null $r(329) = .525$, $p < .001$. The effect size, where $r = .525$, was very large based on Cohen's effect-size index (Warner, 2013). See Figure 5 for the scatter plot for the overall TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 5

Overall TCAP ELA Achievement Level and EasyCBM Reading Fluency Words Per Minute Score



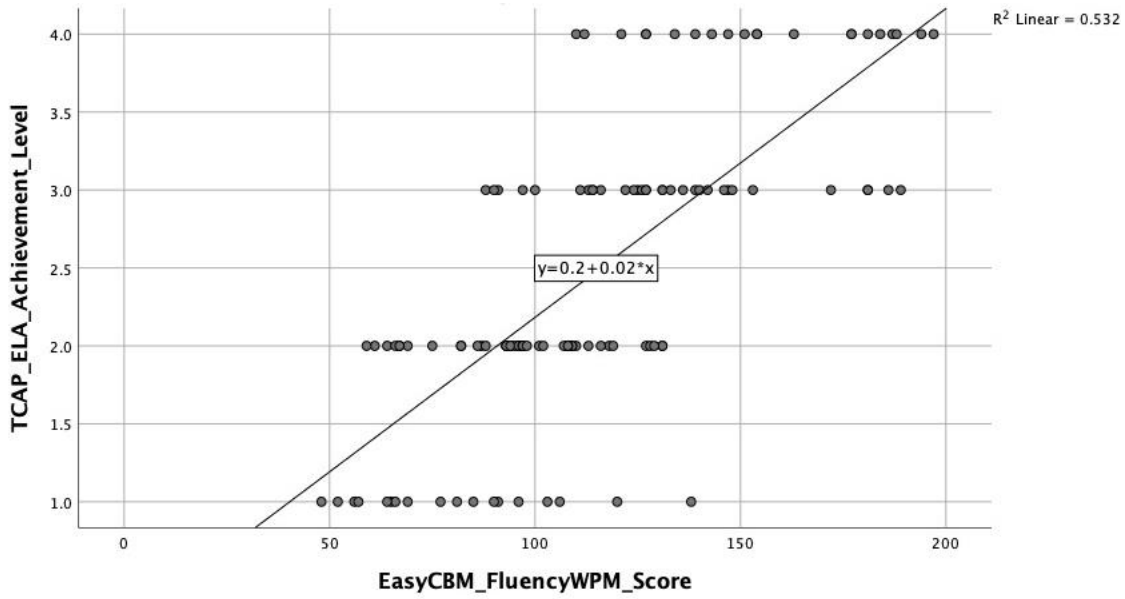
Null Hypothesis Two

For hypothesis two, the researcher examined if there was a relationship between TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores for third grade participants. The researcher found a statistically significant relationship between third grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency

scores. Therefore, the researcher rejected the null $r(118) = .730$, $p < .001$. The effect size, where $r = .730$, was extremely large based on Cohen's effect-size index (Warner, 2013). See Figure 6 for the scatter plot for the third grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 6

Third Grade TCAP ELA Achievement Level and EasyCBM Reading Fluency Words Per Minute Score



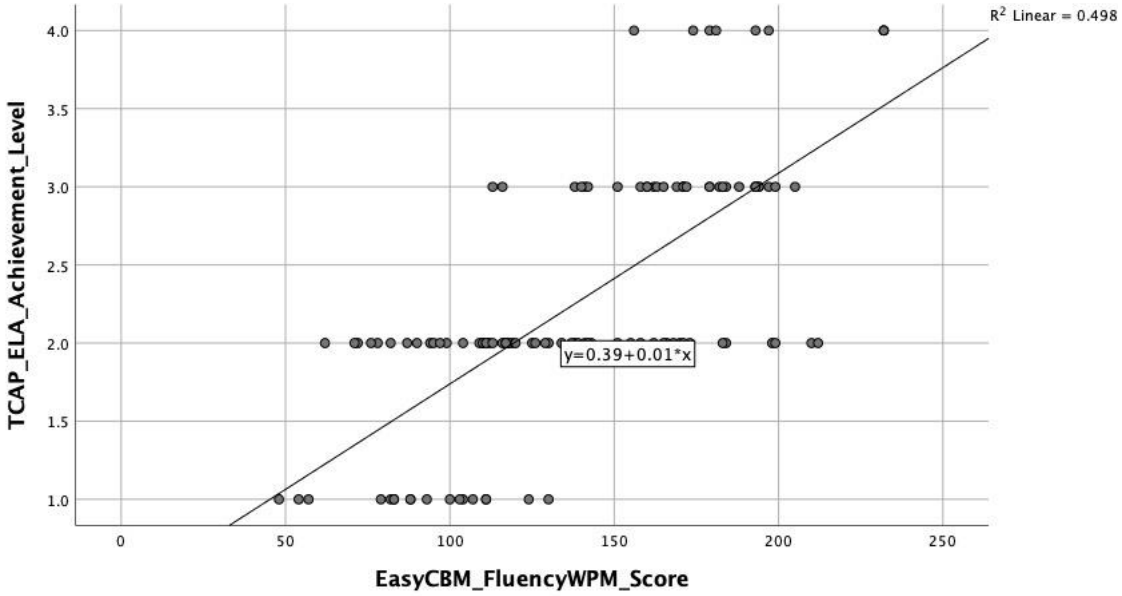
Null Hypothesis Three

For hypothesis three, the researcher examined if there was a relationship between TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores for fourth grade participants. The researcher found a statistically significant relationship between fourth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. Therefore, the researcher rejected the null $r(113) = .706$, $p < .001$. The effect size, where $r = .706$, was very large based on Cohen's effect-size index (Warner, 2013). See

Figure 7 for the scatter plot for the fourth grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 7

Fourth Grade TCAP ELA Achievement Level and EasyCBM Reading Fluency Words Per Minute Score

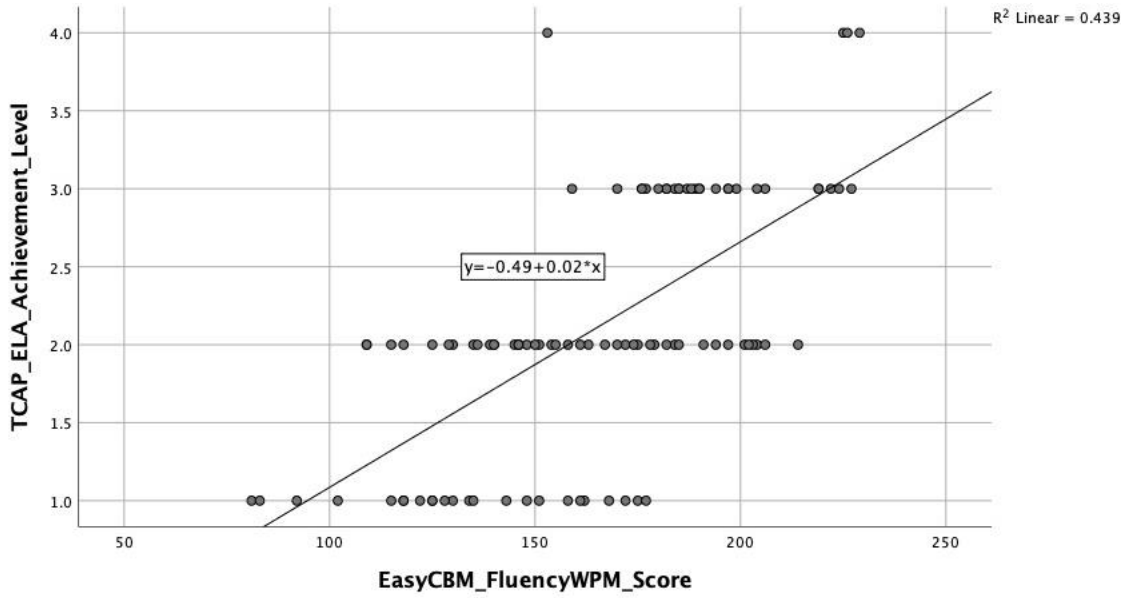


Null Hypothesis Four

For hypothesis four, the researcher examined if there was a relationship between TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores for fifth grade participants. The researcher found a statistically significant relationship between fifth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. Therefore, the researcher rejected the null $r(98) = .663$, $p < .001$. The effect size, where $r = .663$, was very large based on Cohen's effect-size index (Warner, 2013). See Figure 8 for the scatter plot for the fifth grade TCAP ELA achievement level and EasyCBM reading fluency words per minute score.

Figure 8

Fifth Grade TCAP ELA Achievement Level and EasyCBM Reading Fluency Words Per Minute Score



The purpose of this quantitative research study was to determine the relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the TCAP. Because prior research has not analyzed the relationship between these two particular assessments, this correlational research study provides insight into the direction and strength of those relationships. The following chapter provides conclusions, limitations, and recommendations for future study.

CHAPTER FIVE: CONCLUSIONS

Overview

The purpose of this study was to determine if a relationship exists between the dependent variable, TCAP English Language Arts scores, and the independent variable, EasyCBM Passage Reading Fluency scores for third, fourth, and fifth grade students. In this chapter, a summary of the findings of the study according to each research question is presented. Implications and limitations of the study are discussed and recommendations for further research are provided.

Discussion

This study sought to determine the relationship between the dependent variable, TCAP English Language Arts scores, and the independent variable, EasyCBM Passage Reading Fluency scores. The researcher posed four research questions, listed below. While each research question is similar in nature, this section provides discussion for each question separately, focusing on the overall data as well as each grade level's results. Relevant literature and related studies are examined as well.

Research Question One

Is there a relationship between students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypothesis One

For null hypothesis one, the researcher found a statistically significant relationship between overall TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. Although previous studies have investigated the effect of RTI on student achievement, the researcher found no studies analyzing the correlation between students'

CBM scores using EasyCBM and their annual state standardized assessment scores in Tennessee. However, Yeo (2010) reported that many other studies have shown a strong correlation between other CBM assessments and statewide achievement tests. For example, a study in Florida compared a commonly used CBM, the DIBELS oral reading fluency assessment, the Florida Comprehensive Assessment Test (FCAT), and the Stanford Achievement Test (SAT-10). The three assessments were given concurrently, and researchers reported correlations in the .70-.71 range (Roehrig et al., 2008). In the present study, a relationship was found between overall TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores, where Pearson's $r = .525$. In light of the aforementioned studies of Yeo and Roehrig et al., the very large effect size of the present study was deemed reasonable.

Because the state of Tennessee uses CBM assessments such as EasyCBM and DIBELS to screen for specific areas in which students may need extra support, it is important to discuss where RTI programs come into play regarding the results of this study. RTI is based on the idea that schools shouldn't wait until students fall too far behind to provide them with the help they need and should provide targeted and systematic interventions to all students as soon as they reveal the need (Buffam et al., 2010). The two educational theories around which this study is centered help explain why targeted intervention can be so important for learners.

Vygotsky's ZPD theory states that children can grow intellectually with the help of others who are cognitively more capable (Vygotsky, 1978). The ZPD is defined as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Vygotsky believed that students can learn skills that are just beyond their current development through the support and help of

others. Another popular educational theory that supports the use of RTI programs is Carol Dweck's Growth Mindset theory. This theory states that growth is influenced by mindset (Dweck, 2007). As students are equipped with specific reading strategies in RTI reading fluency groups, they can begin to see evidence of success that can have an effect on their mindset. Applying these educational theories to the current study points to the importance of RTI programs to provide targeted support to struggling readers in order to maximize their academic promise. As students receive focused research-based instruction in reading fluency, higher fluency assessment scores could lead to an increase in their overall literacy development, as evidenced by a strong correlation to TCAP English Language Arts scores.

Research Question Two

Is there a relationship between third-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypothesis Two

For null hypothesis two, the researcher found a statistically significant relationship between third grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. In another study conducted in Florida that examined the accuracy of a second-grade oral reading fluency CBM in predicting third grade standardized state reading test performance, the researchers found that the CBM scores generally predicted FCAT performance (Grapin et al., 2017). This relationship is crucial for third graders because, as the Annie E. Casey Foundation (2010) cautions, reading proficiently by the end of third grade can determine a student's future success. Students who are not reading on grade level by third grade are more likely to struggle in school (Wright & Wright, 2003) and are at risk of not graduating on time

(Sparks, 2011). In the present study, a relationship was found between third grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores, where Pearson's r = .730. This was the most significant relationship revealed in the study, with a correlation stronger than either fourth or fifth grade results as well as the overall results. In light of the aforementioned studies of Grapin et al., the Annie E. Casey Foundation, Wright and Wright, and Sparks, the extremely large effect size of the present study was deemed reasonable.

Research Question Three

Is there a relationship between fourth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypothesis Three

For null hypothesis three, the researcher found a statistically significant relationship between fourth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. Roehrig et al. (2008) found that passage reading fluency levels are assigned to indicate whether students are at low risk, some risk, or high risk for not reading on grade level due to oral reading fluency skills, meaning that students' passage reading fluency scores should indicate their overall reading success. In the present study, a relationship was found between fourth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores, where Pearson's r = .706. This was the second most significant relationship revealed in the study, with a correlation stronger than fifth grade results as well as the overall results. Based on the aforementioned study by Roehrig et al. the very large effect size of the present study was deemed reasonable.

Research Question Four

Is there a relationship between fifth-grade students' EasyCBM Passage Reading Fluency assessment score and their English Language Arts score on the Tennessee Comprehensive Assessment Program (TCAP)?

Null Hypothesis Four

For null hypothesis four, the researcher found a statistically significant relationship between fifth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores. As mentioned above, previous studies have used TCAP to compare student achievement and analyze its correlation with curriculum based assessments. In fact, Miller et al. (2015) examined the relationship between TCAP and two other curriculum based assessments, DIBELS and AIMSweb. They found that the reading probes administered had a strong relationship to overall reading proficiency; however, they stated that the comprehension segment of the probe had a stronger relationship to overall reading proficiency than did the fluency portion of the probe. In the present study, a relationship was found between fifth grade TCAP English Language Arts achievement levels and EasyCBM Passage Reading Fluency scores, where Pearson's $r = .663$. Based on the aforementioned study by Miller et al., the very large effect of the present study was not deemed reasonable, but previously discussed studies have differing results (Grapin et al., 2017; Roehrig et al., 2008; Yeo, 2010). This could be a result of the studies' limitations as well as differences in samples and instruments.

Pearson correlation coefficients were used in this study with TCAP English Language Arts scores as the dependent variable and EasyCBM Passage Reading Fluency scores as the independent variable. This correlational design was appropriate for this study because its purpose was to measure the degree and direction of the relationship between multiple variables (Gall et

al., 2007). Assumptions were tested for the Pearson correlation coefficient, and testing showed no apparent violations beyond normality, which was then visually examined.

Correlation results showed there were significant relationships between EasyCBM Passage Reading Fluency scores and TCAP English Language Arts scores for each grade level analyzed as well as overall (see Table 3). After analyzing the results, the researcher rejected all four null hypotheses, which stated that no relationships existed between students' EasyCBM Passage Reading Fluency assessment scores and their English Language Arts scores on the Tennessee Comprehensive Assessment Program (TCAP).

Table 3

Correlations of Relationships between EasyCBM Passage Reading Fluency Words per Minute and TCAP English Language Arts Scores

Variable	*N*	*r*	*p*
Overall	329	.525	<.001
Third Grade	118	.730	<.001
Fourth Grade	113	.706	<.001
Fifth Grade	98	.663	<.001

The researcher originally predicted that there would be a significant relationship between participants' EasyCBM Passage Reading Fluency scores and their TCAP English Language Arts scores. After analyzing the data using a conservative approach in an effort to control the risk of Type I errors, it was confirmed that a significant relationship exists between the two assessment scores, both overall and within each grade level in the study. While "correlation does not imply

causation" (Warner, 2013, p. 265), this significant relationship supports the results of previous similar studies conducted in other states.

Implications

According to the results of this study, a significant relationship exists between participants' EasyCBM passage reading fluency scores and their TCAP English language arts scores, which has potential implications for educators who utilize these assessments to make instructional decisions for students. This study addressed an area that current research has not addressed in order to provide educators and policymakers in Tennessee with relevant data to help inform their decision-making. Students in Tennessee are typically assessed using a curriculum based measurement tool in reading at least three times per year but only take the TCAP English Language Arts assessment once at the end of the year. Because this study found that EasyCBM Passage Reading Fluency scores correlate to TCAP English Language Arts scores, Tennessee educators could potentially use EasyCBM data to inform instruction prior to the state assessment at the end of the school year. This means students could receive remediation that could impact standardized test scores well before those state scores are reported.

In addition, the EasyCBM Passage Reading Fluency assessment takes approximately one minute to administer (University of Oregon, 2014), whereas the TCAP English Language Arts assessment takes approximately 180 to 200 minutes per student (Tennessee Department of Education, n.d.-c). Licenses for EasyCBM are relatively inexpensive (University of Oregon, 2016), and most schools already purchase a curriculum based measurement tool in order to complete required universal screening for each student (Tennessee Department of Education, 2018). Because these two assessments have been found to correlate, it is possible that schools can quickly and inexpensively determine whether a student is predicted to pass the English

Language Arts TCAP at the end of the school year and then prescribe focused and intentional remediation or enrichment for each student based on EasyCBM results. This assessment can be administered multiple times throughout the school year as well in order to gauge a student's progress.

The EasyCBM Passage Reading Fluency assessment gauges how quickly and accurately a child can read a grade level passage. The TCAP English Language Arts assessment measures whether or not a student has mastered grade level standards, which include standards in grammar, writing, literature and informational text, and reading comprehension. The fact that students' scores on these two assessments correlate so strongly suggests that the more fluently a child can read, the better his or her performance on a standardized assessment that tests reading fluency, comprehension, grammar, and writing skills.

This possible connection is important for young readers because, as the Annie E. Casey Foundation (2010) warns, "reading proficiently by the end of third grade can be a make-or-break benchmark in a child's educational development" (p. 9). According to Wright and Wright (2003), students who are not reading on grade level by third grade are more likely to struggle in school. Furthermore, Sparks (2011) asserts that a student who is reading below grade level by third grade is four times less likely to graduate on time than a child who is reading proficiently. In the transition "from *learning to read* to *reading to learn"* (Toste & Ciullo, 2017, p. 259), educators can use the information gleaned in this study to provide appropriate support in the area of reading fluency to ensure academic success for their students. In fact, if educators can crack the code to ensure their students are reading on or above grade level by third grade, they may also help their students graduate high school on time.

Limitations

This study had several known limitations. First, the study's participants were from one public elementary school in southeast Tennessee and it is uncertain whether the correlational findings will generalize to other students or schools. Also, while the sample size (N = 329) was large enough to indicate very large effect sizes (r = .525, r = .706, r = .663) and extremely large effect sizes (r = .730) at the 0.05 alpha level (Warner, 2013), a larger sample including additional grade levels could add credibility to the current body of research.

In addition to limitations regarding the sample, this study only used data from one test session for each of the two assessments: TCAP English Language Arts and EasyCBM Passage Reading Fluency from spring 2019. It is possible that results from other testing sessions during multiples years could differ from the results in this study. These results could also be affected by potential changes in the TCAP assessment administration, such as question types, item writers, and whether the assessment is given on paper or on a computer. Also, this study only analyzed data from one CBM assessment, EasyCBM. Nearly 90% of districts in Tennessee use one of three CBM programs: AIMSweb, STAR, or EasyCBM (Tennessee Department of Education, 2018). Results could possibly differ depending on which specific assessment was utilized.

Finally, participants were not identified as students receiving daily explicit reading fluency intervention versus students who were not receiving this targeted intervention. Because this study analyzed EasyCBM Passage Reading Fluency assessment as one instrument, students receiving specific daily intervention in the area of reading fluency could influence results.

Recommendations for Further Research

The current study concluded that there was a statistically significant relationship between third, fourth, and fifth grade students' EasyCBM Passage Reading Fluency scores and their

TCAP English Language Arts scores. When considering potential areas for further research, considerations should be made regarding this study's limitations.

The following are recommendations for future research:

(a) This study was implemented in a suburban school district located in southeast Tennessee and contained some limitations. These limitations included the size and scope of the student population, the use of only one school and one school district, and limited grade levels. Conducting a follow-up study with larger samples throughout multiple schools or districts across the state could be beneficial and provide further information to the current available research.

(b) It is recommended that a study be conducted over multiple years in order to measure the impact of any changes in the state assessment.

(c) In the state of Tennessee, nearly 90% of districts use one of three CBM programs: AIMSweb, STAR, or EasyCBM (Tennessee Department of Education, 2018). An idea to consider for further research is to compare these three common CBM assessments and their correlation to the TCAP assessment.

(d) Finally, this study did not distinguish between those participants who were receiving explicit reading fluency intervention and those who were not. Further research to determine whether intentional and targeted reading fluency intervention has an effect on TCAP English Language Arts scores could be a welcome addition to the current body of research.

REFERENCES

Amrein-Beardsley, A., & Holloway, J. (2019). Value-added models for teacher evaluation and accountability: Commonsense assumptions. *Educational Policy, 33*(3), 516-542.

Annie E. Casey Foundation. (2010). *Early warning! Why reading by the end of third grade matters*. Baltimore, MD. Retrieved from https://www.aecf.org/resources/early-warning-why-reading-by-the-end-of-third-grade-matters/

Annie E. Casey Foundation. (2013). *Early warning confirmed: A research update on third-grade reading.* Baltimore, MD. Retrieved from https://www.aecf.org/resources/early-warning-confirmed/

Annie E. Casey Foundation. (2019). 2019 *KIDS COUNT data book.* Baltimore, MD: Author. Retrieved from www.aecf.org/resources/2019-kids-count-data-book

Arden, S. V., Gandhi, A. G., Zumeta Edmonds, R., & Danielson, L. (2017). Toward more effective tiered systems: Lessons from national implementation efforts. *Exceptional Children, 83*(3), 269-280.

Backman, O. (2017). High school dropout, resource attainment, and criminal convictions. *Journal of Research in Crime and Delinquency, 54*(5), 715-749.

Baker, S. K., Smolkowski, K., Chaparro, E. A., Smith, J. L., & Fien, H. (2015). Using regression discontinuity to test the impact of a tier 2 reading intervention in first grade. *Journal of Research on Educational Effectiveness, 8*(2), 218-244. doi:10.1080/19345747.2014.909548

Balu, R., Zhu, P., Doolittle, F., Schiller, E., Jenkins, J., & Gersten, R. (2015). *Evaluation of*

response to intervention practices for elementary school reading (NCEE 2016-4000). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Barton, R. & Stepanek, J. (2009). Three tiers to success. *Principal Leadership, 9*(8), 16-20.

Baydu, M. M., Kaplan, O., & Bayar, A. (2013). Facing the influence of poverty on graduation rates in public high schools. *Procedia – Social and Behavioral Sciences, 84,* 233-237. https://doi.org/10.1016/j.sbspro.2013.06.541

Bean, R. M., Dole, J. A., Nelson, K. L., Belcastro, E. G., & Zigmond, N. (2015). The sustainability of a national reading reform initiative in two states. *Reading & Writing Quarterly, 31,* 30-55.

Brookhart, S. M. (1993). Teachers' grading practices: Meaning and values. *Journal of Educational Measurement, 30*(2), 123-142.

Buffam, A., Mattos, M., & Weber, C. (2010). The why behind RTI. *Educational Leadership, 68*(2), 10-16.

Castro-Villarreal, F., Rodriguez, B. J., & Moore, S. (2014). Teachers' perceptions and attitudes about Response to Intervention in their schools: A qualitative analysis. *Teaching and Teacher Education, 40,* 104-112.

Cervetti, G. N., & Heibert, E. H. (2015). The sixth pillar of reading instruction. *Reading Teacher, 68*(7), 548-551.

Children's Defense Fund. (2010). *The state of America's children.* Washington, D.C: Author.

Connor, C. M., Jakobsons, L. J., Crowe, E. C., & Meadows, J. G. (2009). Instruction, student engagement, and reading skill growth in Reading First classrooms. *The Elementary School Journal, 109*(3), 221-250.

Coyne, M. D., Oldham, A., Dougherty, S. M., Leonard, K., Koriakin, T., Gage, N. A., … Gillis, M. (2018). Evaluating the effects of supplemental reading intervention within an MTSS or RTI reading reform initiative using a regression discontinuity design. *Exceptional Children, 84*(4), 350–367. https://doi.org/10.1177/0014402918772791

Cummings, K. D., Stoolmiller, M. L., Baker, S. K., Fien, H., Kame'enui, E. J. (2015). Using school-level student achievement to engage in formative evaluation: Comparative school-level rates of oral reading fluency growth conditioned by initial skill for second grade students. *Reading and Writing, 28*(1), 105-130.

DeLuca, C., Coombs, A., & LaPointe-McEwan, D. (2019). Assessment mindset: Exploring the relationship between teacher mindset and approaches to classroom assessment. *Studies in Educational Evaluation, 61,* 159-169.

Deno, S. L. (1985). Curriculum based measurement: The emerging alternative. *Exceptional Children, 52*, 219-232.

Duncan, G. J. & Murnane, R. J. (Eds.). (2011). *Whither opportunity? Rising inequality, schools, and children's life chances*. New York: The Russell Sage Foundation, and Chicago: Spencer Foundation.

Dweck, C. (2007). *Mindset: The new psychology of success* (1st ed.). New York: Random House.

Dweck, C. S. (2010). Even geniuses work hard. *Educational Leadership, 68*(1), 16.

Elementary and Secondary Education Act, P.L. 89-10, 79 Stat. 27 (1965).

Eun, B. (2018). The zone of proximal development as an overarching concept: A framework for synthesizing Vygotsky's theories. *Educational Philosophy and Theory, 51*(1), 18-30.

Ferguson, M. (2016). ESSA is more than the latest acronym on education's block. *The Phi Delta*

Kappan, *97*(6), 72-73.

Fuchs, D., Fuchs, D., & Vaughn, S. (2008). *Response to Intervention: A framework for reading educators*. Newark, DE: International Reading Association.

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8th ed.). Boston, MA: Pearson.

Gersten, R. & Dimino, J. A. (2006). RTI (Response to Intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly, 41*(1), 99-108.

Gersten, R., Jayanthi, M., & Dimino, J. (2017). Too much too soon? Unanswered questions from national Response to Intervention evaluation. *Exceptional Children, 83*(3), 244-254.

Goffreda, C., & DiPerna, J. (2010). An empirical review of psychometric evidence for the DIBELS. *School Psychology Review, 39,* 463-483.

Grapin, S. L., Kranzler, J. H., Waldron, N., Joyce-Beaulieu, D., & Algina, J. (2017). Developing local oral reading fluency cut scores for predicting high-stakes test performance. *Psychology in the Schools, 54*(9), 932–946. https://doi.org/10.1002/pits.22035

Grapin, S. L., Waldron, N., & Joyce-Beaulieu, D. (2019). Longitudinal effects of RtI implementation on reading achievement outcomes. *Psychology in the Schools, 56*(2), 242–254. https://doi.org/10.1002/pits.22222

Gredler, M. E. (2012). Understanding Vygotsky for the classroom: Is it too late? *Educational Psychology Review, 24*(1), 113-131.

Hagan, J., & Foster, H. (2012). Intergenerational educational effects of mass imprisonment in America. *Sociology of Education, 85*(3), 259-286. Retrieved from http://www.jstor.org/stable/41507162

Haladyna, T., Haas, N., & Allison, J. (1998). Continuing tensions in standardized testing. *Childhood Education, 74*(5), 262-273.

Hedrick, J. A. (2015). Analysis of workforce skills in high school graduates: Self report of high school seniors in northwest Ohio. *Journal of Youth Development, 10*(1), 1-13. Retrieved from http://jyd.pitt.edu/ojs/jyd/article/view/424/410

Higgins Averill, O., Baker, D., & Rinaldi, C. (2014). A blueprint for effectively using RTI intervention block time. *Intervention in School and Clinic, 50*(1), 29-38. https://doi.org/10.1177/1053451214532351

Himelfarb, I. (2019). A primer on standardized testing: History, measurement, classical test theory, item response theory, and equating. *The Journal of Chiropractic Education, 33*(2), 151-163. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6759012/?tool=pmcentrez&report=abstract

Howell, K. W., & Nolet, V. (2000). Curri*culum based evaluation: Teaching and decision making*. Stamford, CT: Wadsworth

Jacob, B. A. (2005). Accountability, incentives, and behavior: The impact of high-stakes testing in the Chicago Public Schools. *Journal of Public Economics, 89*(5-6), 761-796.

Koretz, D. (2001). *New work on the evaluation of high-stakes testing programs*. Symposium at the National Council on Measurement in Education (NCME) Annual Meeting, Seattle, WA.

Leonard, L. J. (2001). From indignation to indifference: Teacher concerns about externally imposed classroom disruptions. *The Journal of Educational Research, 95*(2), 103-109.

McCaffrey, D. F., & Hamilton, L. S. (2007). *Value-added assessment in practice: Lessons from*

the Pennsylvania value-added assessment system pilot project. Santa Monica, CA: RAND Education.

McCutchen K. L., Jones, M. H., Carbonneau, K. J., & Mueller, C. E. (2016). Mindset and standardized testing over time. *Learning and Individual Differences, 45,* 208-213.

Mertler, C. A. (2002). *Using standardized test data to guide instruction and intervention*. (ERIC Document Reproduction Service No. ED 470589). Retrieved from http://files.eric.ed.gov/fulltext/ED470589.pdf

Miller, K. C., Bell, S. M., & McCallum, R. S. (2015). Using reading rate and comprehension CBM to predict high-stakes achievement. *Journal of Psychoeducational Assessment, 33*(8), 707-718.

National Education Association. (2014). *Overtired of being overtested.* Retrieved from http://www.nea.org/home/60022.htm

National Research Council. (2010). *Getting value out of value-added: Report of a workshop*. Washington, DC: The National Academies Press. https://doi.org/10.17226/12820

No Child Left Behind Act of 2001, P.L. 107-110, 30 Stat. 750 (2002).

Paige, D. D. (2018). Reading Recovery© won't fix poor core tier-one reading instruction. *Reading Psychology, 39*(5), 492-497.

Roehrig, A. D., Petscher, Y., Nettles, S. M., Hudson, R. F., & Torgesen, J. K. (2008). Accuracy of the DIBELS oral reading fluency measure for predicting third grade reading comprehension outcomes. *Journal of School Psychology, 46*(3), 343–366. https://doi.org/10.1016/j.jsp.2007.06.006

Rose, L. C., & Gallup A. M. (2007). Kappa/Gallup poll of the public's attitudes toward the

public schools. *Phi Delta Kappan, 89*(1), 33-48. Retrieved from http://www.pdkintl.org/kappan/kpollpdf.htm

Sanders, W. (2006, July 27). *House committee on education and the workforce hearing on "No Child Left Behind": Can growth models ensure improved education for all students*? Retrieved from http://archives.republicans.edlabor.house.gov/archive/hearings/109th/fc/nclb07270 sanders.htm

Saven, J. L., Tindal, G., Irvin, P.S., Farley, D., & Alonzo, J. (2014). *EasyCBM norms*. Behavioral Research & Teaching. Retrieved from http://files.eric.ed.gov/fulltext/ED547421.pdf

Shapiro, E. S. (2011). *Academic skills problems: Direct assessment and intervention*. New York: Guilford Press.

Sharp, K., Sanders, K., Noltemeyer, A., Hoffman, J. & Boone, W. J. (2016). The relationship between RtI implementation and reading achievement: A school-level analysis, preventing school failure. *Alternative Education for Children and Youth, 60*(2), 152-160. DOI: 10.1080/1045988X.2015.1063038

Shepard, L. A. (2016). Testing and assessment for the good of education: Contributions of AERA presidents, 1915-2015. *Educational Researcher, 45*(2), 112-121.

Shinn, M. R. (2008). Best practices in using curriculum based measurement in a problem-solving model. *Best Practices in School Psychology*, *IV,* 671-697. Retrieved from https://www.researchgate.net/publication/237647696_Best_Practices_in_Using_Curriculum-based_Measurement_in_a_Problem-Solving_Model

Sparks, S. (2011). Study: Reading problems can flag potential dropouts; "Double jeopardy: how

poverty & third-grade reading skills influence high school graduation." *Education Week, 30*(28), 5.

Sparks, S. (2015). RTI practices fall short of promise. *Education Week, 35*(12), 1, 12. Retrieved from https://www.edweek.org/ew/articles/2015/11/11/study-rti-practice-falls-short-of-promise.html

Stone, Z. (2016). *Supporting early grades student achievement: An exploration of RTI practices*. Tennessee Department of Education: Division of Data and Research. Retrieved from https://files.eric.ed.gov/fulltext/ED572947.pdf

Supovitz, J. (2009). Can high stakes testing leverage educational improvement? Prospects from the last decade of testing and accountability reform. *Journal of Educational Change, 10*(2), 211-227.

Swanson, E., Stevens, E. A., Scammacca, N. K., Capin, P., Stewart, A. A., & Austin, C. R. (2017). The impact of tier 1 reading instruction on reading outcomes for students in grades 4-12: A meta-analysis. *Reading and Writing, 30*(8), 1639-1665.

Tennessee Department of Education. (2015). *Response to instruction and intervention framework*. Retrieved from https://www.tn.gov/content/dam/tn/education/special-education/rti/rti2_manual.pdf

Tennessee Department of Education. (n.d.-a). *Tennessee state report card*. Retrieved from https://reportcard.tnk12.gov/

Tennessee Department of Education. (n.d.-b). *Tennessee value-added assessment system*. Retrieved from https://www.tn.gov/education/data/tvaas.html

Tennessee Department of Education. (n.d.-c). *Testing times by grade/subject*. Retrieved from https://www.tn.gov/education/assessment/testing-times-by-grade-subject.html

Tennessee Department of Education. (2018a). *Four years of learnings from RTI² implementation in Tennessee*. Retrieved from https://www.tn.gov/content/dam/tn/education/reports/rpt_rti_report_assessing_progress.pdf

Tennessee Department of Education. (2018b). *TNReady achievement (ACH) operational 2017-2018 technical bulletin*. Retrieved from http://www.livebinders.com/media/get/MTkxNzI1MDk

Tennessee State Board of Education. (2017). *Tennessee English Language Arts Standards*. Retrieved from https://www.tn.gov/content/dam/tn/stateboardofeducation/documents/massivemeetingsfolder/meetingfiles4/10-20-17_III_J_Non-Substantive_Changes_to_Math_ELA__Science_Standards_Attachment_2_-_ELA.pdf

Toste, J. R. & Ciullo, S. (2017). Reading and writing instruction in the upper elementary grades. *Intervention in School and Clinic, 52*(5), 259-261.

Ujifusa, A. (2012). Standardized testing costs states $1.7 billion a year, study says. *Education Week, 32*(13). Retrieved from https://www.edweek.org/ew/articles/2012/11/29/13testcosts.h32.html

University of Oregon. (2014a). *EasyCBM norms*. Retrieved from https://secure2.easycbm.com/teachers/auth/resources.php?get_file=Nationally%20Stratified%20District%20Norms.pdf

University of Oregon. (2014b). *Technical manual: EasyCBM.* Eugene, OR: Behavioral Research and Teaching.

University of Oregon. (2016). *EasyCBM user's manual*. Retrieved from

https://help.easycbm.com/wp-content/uploads/2016/01/easyCBM-Teacher-Deluxe-Users-Manual.pdf

U.S. Department of Labor. (2012). *America's youth adults at 24: School enrollment, training, and employment transitions between ages 23 and 24.* Washington, D.C: Author.

Van Norman, E. R. & Parker, D. C. (2016). An evaluation of the linearity of curriculum based measurement of oral reading progress monitoring data: Idiographic considerations. *Learning Disabilities Research & Practice, 31*(4), 199-207.

Vellutino, F. R., Scanlon, D. M., Zhang, H., & Schatschneider, C. (2008). Using response to kindergarten and first grade intervention to identify children at-risk for long-term reading difficulties. *Reading and Writing, 21*(4), 437-480.

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Cambridge, MA: Harvard University Press.

Vygotsky, L. S. (2011). The dynamics of the schoolchild's mental development in relation to teaching and learning. *Journal of Cognitive Education and Psychology, 10*(2), 198-211.

Warner, R. (2012. *Applied statistics: From bivariate through multivariate techniques* (2nd ed.). Thousand Oaks, CA: SAGE.

Werts, M. G., Lambert, M., & Carpenter, E. (2009). What special education directors say about RTI. *Learning Disability Quarterly, 32*(4), 245-254.

Wright, P. & Wright, P. (2003). *Wrightslaw: No Child Left Behind.* Chicago, IL: Harbor House Law Press, Inc.

Yeo, S. (2010). Predicting performance on statewide achievement tests using curriculum-based measurement in reading: A multilevel meta-analysis. *Remedial and Special Education, 31*, 412-422.

Zirkel, P. A. (n.d.). *The legal dimension of RTI: Part II. State laws and guidelines*. Retrieved from http://www.rtinetwork.org/learn/ld/the-legal-dimension-of-rti-part-ii-state-laws-and-guidelines

APPENDIX A

Director of Schools Letter of Permission to Conduct Research

February 4, 2020

Stephanie Stone
Doctoral Candidate
Liberty University
[redacted]

Dear Stephanie Stone:

After careful review of your research proposal entitled EASYCBM AND THE TENNESSEE COMPREHENSIVE ASSESSMENT PROGRAM: A CORRELATIONAL ANALYSIS OF READING ACHIEVEMENT, I have decided to grant you permission to receive and utilize the Spring 2019 EasyCBM and TCAP data for [redacted] students enrolled during the 2018-19 school year for your research study.

Check the following boxes, as applicable:

☒ The requested data WILL BE STRIPPED of all identifying information before it is provided to the researcher. The [redacted] Supervisor of Special Populations will strip the data.

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

☐ I am requesting a copy of the results upon study completion and/or publication.

Sincerely,

[redacted]

Dr. Russell Dyer
Director of Schools
[redacted]

APPENDIX B

Institutional Review Board Approval Letter

[redacted]

Title: EASYCBM AND THE TENNESSEE COMPREHENSIVE ASSESSMENT PROGRAM: A CORRELATIONAL ANALYSIS OF READING ACHIEVEMENT
Creation Date: 1-18-2020
End Date:
Status: Approved
Principal Investigator: Stephanie Stone
Review Board: Research Ethics Office
Sponsor:

Study History

Submission Type Initial	Review Type Exempt	Decision Exempt

Key Study Contacts

Member Michael Patrick	Role Co-Principal Investigator	Contact [redacted]
Member Stephanie Stone	Role Principal Investigator	Contact [redacted]
Member Stephanie Stone	Role Primary Contact	Contact [redacted]