

The Relationship between Third Grade TNReady ELA Scores and STAR Reading Scores of  
Students Participating in a Small Group Differentiated Reading Program

By

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## ABSTRACT

The purpose of this predictive correlational research study was to determine the relationship between STAR Reading assessments and the Tennessee Comprehensive Assessment Program TNReady English Language Arts (TCAP TNReady ELA) of third-grade students who participated in a small-group differentiated reading program for three years by the end of their third grade year. Participants were randomly selected after meeting sample criteria and consisted of 194 students, 50.5% males and 49.5% females, and respective socioeconomic designation of 54.1% economically disadvantaged and 45.9% non-economically disadvantaged among participating elementary schools. Data were analyzed using multiple linear regression and independent-samples *t*-test to determine predictability and differences among the variables. Multiple regression revealed no significant predictability between the combined STAR Reading assessments and TCAP TNReady ELA exam for females and socioeconomic groups, economically disadvantaged and non-economically disadvantaged participants in this study. However, results revealed a significant regression equation [ $F(2, 95) = 4.566, p = .013$ ] with an  $R^2$  of .088 for males. Additionally, paired samples *t*-tests were calculated to determine academic growth for gender and socioeconomic subgroups. All participants in this study demonstrated academic growth with female students and non-economically disadvantaged students scoring higher on their respective universal screener assessment than their respective counterparts, males and economically disadvantaged. Males and non-economically disadvantaged, consequently, had a greater mean score differences than females and economically disadvantaged indicating more academic growth.

*Key Words: Predictive or Predictor Assessment, Small-group Differentiated Reading Program, STAR Reading Enterprise Assessment, Tennessee Comprehensive Assessment Program TNReady English Language Arts (TCAP TNReady ELA), Universal Screener*

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## DEDICATION

*Without counsel purposes are disappointed: but in the multitude of counsellors they are established.*

*Proverbs 15:22 (KJV)*

This research study is dedicated:

To God through his son, Jesus Christ, from whom all is possible.

To my husband, Jerry. You have been my support system like I could never have imagined. Thank you, from the bottom of my heart, for your lasting love, patience, moral support, and encouragement for all the times you knew I needed them all most. I will clean off our kitchen table now. I love you.

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In memory of my father, C. W. Snodgrass, Jr., who held on to life as long as he could while always telling me just how proud of me he was. I miss you, Dad.

In memory of my ex-husband, Clifford Edwards, Jr., whose words, "You'll never be more educated than me" have resonated since 1998.

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## CHAPTER 1

### Introduction

#### Background of the Study

Grade-level reading by the end of third grade has been a focus for improving literacy since educational policy makers recognized that students learn how to read through third grade and began reading to learn in subsequent grades. Consequently, the Tennessee Department of Education (TDOE) (2018) focused on grade-level reading by the end of third grade through early literacy intervention to assist those struggling readers in kindergarten through third grade due to the importance of learning to read proficiently in those respective grades. Aside from the importance of reading on grade-level by the end of third grade, a noticeable increase in student populations receiving special education services also factored into the need for reevaluation of diagnosing specific learning disabilities. The reauthorization of Individuals with Disabilities Education Act in 2004 correlated learning disability diagnosing with intervention need. Thus, the TDOE (2018) reported existing trends confirmed an increasing number of non-proficient learners unable to experience grade-level learning and more students diagnosed with learning disabilities. Having more below-proficient students coupled with more special education required services, a change initiative was recognized and implemented (Tennessee Department of Education, 2018). The TDOE's (2018) resulting mandate's intent was to narrow the criteria for an ever-increasing costly special education service by pinpointing targeted learning deficits among the lowest performing students and increasing reading proficiency in all grades K-12. Subsequently, the TDOE (2015) fully implemented a specific intervention initiative, Response to Instruction and Intervention (RtI<sup>2</sup>), to assist students in becoming successful in reading proficiently in all grades while more stringently identifying special education students.

In 2014, RtI<sup>2</sup> was initiated in Tennessee and despite the structure and intent of such mandate, there still exists low-performing students reading below grade level despite the adhered to protocol for reading interventions (Tennessee Department of Education, 2018). Although the TDOE (2018) mandated RtI<sup>2</sup>, nonexistent funding placed a fidelity burden on school districts. Relative district-wide intervention programs are quite costly for school districts. The Tennessee School Boards Association (TSBA) (2016) reported the interdependency of students' average daily membership (ADM), a county's fiscal capacity, and state funding in the basic education funding format, which did not account for intervention personnel or programs. Because school districts lack adequate funding to hire certified personnel specifically for RtI<sup>2</sup>, many districts use non-certified personnel to assist in meeting the mandated requirements of RtI<sup>2</sup> because of the non-specification of certified personnel as reading interventionist (Tennessee Department of Education, 2015). However, based on the Tennessee Department of Education's *Response to Instruction and Intervention Framework* (2015), a focus of the RtI<sup>2</sup> initiative is small-group instruction with a certified teacher for one hour of intervention per day. Therein lies a problem for financially constrained districts: Determining which intervention programs to purchase considering their budgetary constraints versus effectiveness of a costly program.

Tennessee Comprehensive Assessment Program (TCAP) TNReady English Language Arts (ELA) scores in third grade and Renaissance Learning's STAR Reading scores will be analyzed for relationship and predictability for third-grade students who also participated in a small-group differentiated reading program during this selected school year. With the state's goal being 75% of all students on grade-level reading by 2025, according to the TDOE (2015), studying relationship and predictability of administered assessments relative to the high-stakes TCAP TNReady ELA assessment is paramount. However, the administered universal screener

and end-of-year predictive exam through STAR Reading is only used as assessment instruments, not an incorporated reading program or intervention.

The respective school system chose to implement a small group differentiated reading program developed by Beverly Tyner, an educator with over 30 years' experience ranging from classroom teacher to college professor, and Sharon Green, a former classroom and special education teacher (Blue Ridge Literacy Project, n.d.; Tyner, & Green, 2005). White (2014) stated that Tyner's published works focus on literacy strategies primarily for kindergarten through fifth grade with objectives on fluency, word study, vocabulary, and comprehension. The small-group differentiated reading program met the state's research-based qualification mandates established for Tennessee's Response to Instruction and Intervention (RtI<sup>2</sup>) initiative. Consequently, Thompson (2016) reported the respective school district implemented the small-group differentiated reading program beginning in the 2016-2017 school year. This stated small group reading program is still implemented as the key component of early reading instruction and intervention among kindergarten through third grade throughout this study's school district. The school district uses both TCAP TNReady ELA scores and Renaissance Learning's STAR Reading assessment for universally screening and assessing reading composite progress.

The Tennessee Department of Education (n.d.-c) modified the Tennessee Comprehensive Assessment Program (TCAP) to not only test for memorization and test-taking skills, but now also complex content understanding and correlates with the state's Ready Student initiative. According to TDOE (n.d.-c), this assessment program has tested students since 1988.

According to Renaissance Learning, Incorporated and The Research Foundation for STAR Assessments' (2013; 2018) report, STAR Reading assessments have been recognized by both the National Center on Intense Intervention and the National Center on Response to

Intervention for progress monitoring. "Renaissance Learning has conducted extensive research and consulted heavily with reading and assessment experts to arrive at the skills most appropriate for assessing reading development" (Renaissance Learning, Incorporated, & The Research Foundation for Star Assessments, 2013, p. 4).

### **Statement of the Problem**

According to the Tennessee Department of Education's (2015) RtI<sup>2</sup> framework, educators are required to meet the rigorous mandates defined by the state's intervention program. However, at the time RtI<sup>2</sup> was mandated, no research-based intervention programs responded to a request for proposal, were vetted, or were introduced by the state for use in school districts. Local education associations (LEAs) had the task of finding and purchasing such programs independently. In a Staff Reports (2019) article, this study's district's declining student enrollment trends impact decisions regarding assessment, reading, and intervention programs to purchase while meeting the program criteria Every Student Succeeds Act (ESSA) and the state's intervention initiative, Response to Instruction and Intervention (RtI<sup>2</sup>). The Tennessee State Board of Education (n.d.) reports financial interdependency between student enrollment, state and local financial contributions, and overall district operation. Despite decreasing student enrollment and the lack of public-school funding, costs for research-based intervention programs remain consistent.

With the state-mandated RtI<sup>2</sup> initiative, districts are pressed to invest in research-based intervention programs for qualifying assessment-identified students in need of reading intervention. However, to increase grade-level reading by the end of third grade, purchasing a reading program that addresses all three tiers addresses reading instruction for school districts. The Tennessee Department of Education's (2017) *Tennessee Succeeds* initiative strives for all

public-school districts, non-Title and Title I alike, to achieve the 75% grade-level reading by the end of third grade. A financially limited Title I school district in Northeast Tennessee made the determination to purchase a small group differentiated reading program developed by Beverly Tyner and Sharon Green considering their budgetary constraints versus other reading programs.

Compounding this intervention issue is alignment with the Tennessee State Standards and the TCAP TNReady Assessment. The research-based small-group differentiated reading program chosen by this school district focuses on fluency, word study, vocabulary, and comprehension (White, 2014). However, the state-mandated assessment is comprised of questions based on state standards that comprise only 13%-18% of the small-group differentiated reading program's focus (Tennessee Department of Education, n.d.-d).

According to Tyner and Green (2005), their respective small-group differentiated reading program was modeled after the work of Darrell Morris, whose work later became known as Early Steps, that further influenced Francine Johnston, Marcia Invernizzi, and Connie Juel who developed Book Buddies in 1998. Consequently, the small-group differentiated reading program is an in-class reading program for all students still implemented as the key component of reading instruction among kindergarten through third grade throughout the school district in this study.

### **Purpose of the Study**

The purpose of this quantitative research study was to determine the relationship between STAR Reading assessments and the Tennessee Comprehensive Assessment Program TNReady English Language Arts (TCAP TNReady ELA) assessment of third-grade students who participated in a small-group differentiated reading program to determine correlation and predictability between the two assessment programs. The study included data from the district-used universal screener STAR Reading Fall 2018, STAR Reading Spring 2019 predictor

assessment, and end-of-year state-mandated test for third grade ELA, TCAP TNReady. The 2018-2019 school year was selected based on having implemented the small group differentiated reading program for three full years within the school district beginning in 2016-2017, which equates to the sample having the implemented small-group differentiated reading program for three full academic years by the end of their third grade year since implemented by the school district.

### **Research Questions**

The following 10 research questions guided the analysis of data:

1. Are the third-grade STAR Reading Fall 2018 exam and the third grade STAR Reading Spring 2019 exam significant predictors of the TCAP TNReady third-grade ELA exam?
2. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for female students?
3. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for male students?
4. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for economically-disadvantaged students?
5. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for non-economically disadvantaged students?

6. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores?
7. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for female students?
8. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 normal curve equivalent scores for male students?
9. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students?
10. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students?

### **Significance of the Study**

Jayroe and Brenner (2002) found that arguments exist both for and against spending large amounts of district funds for school districts financially depressed by decreased student enrollment without any subsidization from states for mandated, evidence-based intervention programs. Additionally, Balu, Zhu, Doolittle, Schiller, Jenkins, and Gersten (2015) reported there also exists arguments against intervention fidelity due to those same funding issues. With the increasing importance of making financial and educational decisions faced by school boards, it is imperative that an analytical approach to implemented program relationship be done to

justify such decisions. Therefore, it is also important that small group reading program be analyzed for relationship between assessments for this Northeast Tennessee school district. The quantitative research study will determine the relationship between Star Reading assessments and the Tennessee Comprehensive Assessment Program TNReady English Language Arts (TCAP TNReady ELA) assessment of third-grade students who participated in this small-group differentiated reading program.

### **Definition of Terms**

The following definitions are provided to provide clarification and continuity throughout this work:

Predictive or predictor assessment: An interim assessment to evaluate student progress or achievement and to approximate student performance, generally, on a high-stakes assessment (Great Schools Partnership, 2013).

Response to Instruction and Intervention (RtI<sup>2</sup>): The intervention initiative for Tennessee public schools initiated in 2014 to decrease achievement gaps while also extending and validating more thoroughly SLD identification. The design consists of three tiers into which all students are identified and assigned. Instruction, intervention program assignment, and duration is dependent on respective tier (Tennessee Department of Education, 2015).

Small-group differentiated reading program: For this study's purpose and unless noted, this program refers to Beverly Tyner's and Sharon Green's small group differentiated reading program adopted and mandated in the analyzed school district beginning in 2015 for kindergarten through third grades (Tyner, & Green, 2005).

STAR Reading Enterprise assessment: A reading assessment developed by Renaissance Learning, Incorporated (2013; 2018) used as a universal screener for RtI<sup>2</sup> tier placement or

predictor assessment of student performance on either a norm- or criterion-referenced assessment. Any reference to Star Reading Enterprise will be Star Reading in this study.

Tennessee Comprehensive Assessment Program TNReady ELA (TCAP TNReady ELA):

The end-of-year formative assessment administered to students in grades three through eight to measure the respective school year's progress in reading, math, science, and social studies. As of the 2018-2019 year, TCAPs are now referred to as the TCAP TNReady assessment (Tennessee Department of Education, n.d.-c).

Universal screener: A norm-referenced formative assessment administered to students at the beginning of the academic year for identifying and placement of students within the intervention tiers (Center on Response to Intervention at American Institutes for Research, n.d.).

### **Delimitations**

The current small-group differentiated reading program was selected because it is the main reading program administered to all students through third grade. The program has been implemented for three years in the single Northeast Tennessee studied district. Additionally, the program was the only one selected to analyze. Furthermore, all data used is archived data based on summative assessments given as a universal screener in the fall, and academic predictor in the spring, and the state-mandated yearly assessment. In this study, it is assumed that students in all tiers defined by the Tennessee Department of Education's *Response to Instruction and Intervention Framework* (2015) manual receive intervention or enrichment for the state-mandated time while being instructed using the small group differentiated reading program. Lastly, it is also assumed that the small group reading program is administered with fidelity whether by a certified teacher or a paraprofessional.

### **Limitations**

Limitations of this study vary. One limitation is the consideration of human error relative to data input into Microsoft Excel software. Another limitation is reading instruction delivery. No efforts will be made within the scope of this study to validate the extent to which reading instruction was provided by certified personnel. Time accountability is another limitation. No efforts will be made within the scope of this study to validate the time spent engaged in intervention or whole group, Tier I, instruction. Additionally, the ultimate findings may be limited by being only those students in third grade, randomly selected from among the nine elementary schools within the selected district. Lastly, another limitation of this study is the random sample consisting of third-grade students from among all third-grade students in the nine elementary schools in this school district. Based on that random sampling, there is no way to discern which participant was assigned to Tier I, Tier II, or Tier III after the STAR Reading universal screener assessment according to Tennessee's Response to Instruction and Intervention (RtI<sup>2</sup>) mandate.

### **Organization of the Study**

Chapter 1 introduces the study topic while stating the problem, related research questions, the significance of the study, associated definitions, delimitations, and limitations of the study. Chapter 2 reveals how instrumental Special Education reform through congressional legislation impacted general education practices through a tiered-model intervention program, the impact of grade-level reading by third grade's end, and effective reading strategies. Chapter 3 focuses on the predictive correlational methodology and data collection of the study using archived data testing the relationships between the Star Reading Fall intervention placement scores, Star Reading end-of-year scores, and third grade ELA TCAP TNReady composite scores. Chapter 4

reveals the study's analyses and findings based on the seven research questions. Chapter 5 summarizes this study and findings, discusses impacts, and recommends further study.

## CHAPTER 2

### Literature Review

#### Introduction

The U. S. Department of Education (ED) (n.d.) states the relative importance of state standards to attain high academic expectations, assess student progress, and prepare all students for challenging post-secondary endeavors for global competition while expecting state education agencies (SEA) to adopt related standards. The ED (n.d.) suggests all content standards meet those rigorous demands. Despite the adoption of challenging standards among states over 20 years ago, the U. S. Department of Education's Institute of Educational Sciences' (IES) National Center for Education Statistics (NCES) (n.d.) reported that 65% of assessed fourth graders were below grade level as reported on the 2019 National Assessment of Educational Progress (NAEP).

Reilly, Neumann, and Andrews (2019) studied three decades-worth of related NAEP results that included 3.9 million students with gender differences by grade 12 as small-to-medium ( $d = -.32$ ) with learning gaps widening over time between males and females. This study analyzed thirty years' worth of gender difference gaps in reading and writing on the NAEP assessment based on cognitive ability and reported a greater rate of maturation for females as opposed to males, which is correlated with reading aptitude (Reilly et al., 2019). The National Assessment Governing Board (n.d.) reported NAEP reading comprehension results as significantly different from 2017, which was reported as a one-point decline in scale score, while only increasing reading achievement by four scale score points from 1992, overall. Although reading standards have drastically improved from basic reading skills, reading proficiency has not (Reilly et al., 2019).

## Reading Proficiency

Proficient reading is often defined as mastering the grade-level content standards as established by SEA. Ediger (1997) extensively reported on the monitorial school development in the early nineteenth century by Joseph Lancaster, who ultimately contributed to the public education format of reading instruction. Lancaster's reading instruction, the first official reading program in the United States, prompted formal record to reproduce his method of leveled reading instruction focused on basic decoding through simple syllabication and memorization prior to student promotion (Ediger, 1997). Norman, Newell, and Simon (as cited in Bransford, Brown, Cocking, Donovan, & Pellegrino, 2004, p. 8) reported the culmination of cognitive science from among interdisciplinary fields including anthropology, computer science, developmental psychology, neuroscience, and various psychology subset fields. As a result, learning for recall alone became learning to understand (Bransford et al., 2004).

Vygotsky's (as cited in Doolittle, 1995, p. 2) work yielded that children learn in incremental stages while first making usage of social tools, such as their hands, then progressing to more complex cultural signs, such as language. Muter, Hulme, Snowling, and Stevenson (2004) found another crucial key component to reading acquisition was oral language proficiency first established within the home, which correlates to the first social structure for learning. While Vygotsky's work focused on the social aspect of learning, Piaget (as cited in Huitt, & Hummel, 2003, p. 1) focused more on the physiological aspect of learning.

Although Piaget approached learning from a trained biologist's reference, he, like Vygotsky, theorized learning strata that children advance through during cognitive development based on experiential cognition. Combined studies by Vygotsky, Piaget, Dewey, Bruner, and Neisser established the constructivist theory of learning and instruction through learning levels

(Huitt, & Hummel, 2003). More recently, however, Clay (as cited in Kaye and Lose, 2019) theorized that early reading learners bring their own unique experiences and understandings to learning and therefore should be instructed according to each student's strengths.

Over a century later, in 1997, the National Reading Panel was assembled, at the request of Congress, to select from over 100,000 studies on the most effective reading instruction components (U. S. Department of Health and Human Services, National Institutes of Health, & Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2019). According to the panel of 14, whose work concluded in 2000, six factors in combination were the most effective, research-based methods for effective reading acquisition: Phonemic awareness, phonics, fluency, guided oral reading, teaching vocabulary words, and comprehension strategies (U. S. Department of Health and Human Services, National Institutes of Health, & Eunice Kennedy Shriver National Institute of Child Health and Human Development, 2019). Whether federal government suggested, or state-mandated, effective reading instruction is obligatory for public school systems while addressing intervention for those struggling readers (Kirkham and Lampley, 2014).

### **Socioeconomic Groups and Reading Proficiency**

Ng (2018) reported that economically-disadvantaged students in many developed countries perform consistently below that of non-economically disadvantaged students on standardized reading assessments. However, Buckingham, Beaman, and Wheldall (2014) revealed the pre-education home learning environment that consisted of available literary materials, cultural amelioration, and literacy home practices impacted reading prerequisites in either conducive or non-conducive manners. Similarly, Muter, Hulme, Snowling, and Stevenson (2004) found that a crucial key component to reading acquisition was oral language proficiency.

### **Literacy Prerequisites**

Liberman, Shankweiler, Fischer, and Carter (as cited in Muter, Hulme, Snowling, and Stevenson, 2004, p. 665) along with Savin (as cited in Muter, Hulme, Snowling, and Stevenson, 2004, p. 665) cited the phonemic awareness in speech impacted later word recognition in print. Despite this connection, Bronfenbrenner and Ceci along with Turkheimer et al. (as cited in Buckingham, Beaman, and Wheldall, 2014, p. 430) indicated a "bioecological" model for reading acquisition as either being beneficial in non-economically disadvantaged environments or non-beneficial in economically-disadvantaged environments.

For example, Rubiner (2016) stated that economically-disadvantaged parents verbally interact with their children less than non-economically disadvantaged counterparts. Rubiner's (2016) findings support Muter, Hulme, Snowling, and Stevenson's (2004) previous work's results by connecting the lack of verbal interaction with oral language proficiency prior to formal education.

In a longitudinal mixed-methods study by Hart and Risley (as cited in Charlotte Bilingual Preschool, 2016), 86% to 98% of vocabulary used by parents was also recorded in use by the 42 child samples by age 36 months with a range of 149 to 382 words per hour among the diverse socioeconomic families. Additional results by Lee (as cited in Buckingham, Beaman, & Wheldall, 2014) stated that a two-year-old child's expressive vocabulary, which resulted from oral language interaction, understanding, and mastery, predicted both language and reading skills through fifth grade. Lee's same study (as cited in Buckingham, Beaman, & Wheldall, 2014) further correlated expressive language at age three with literacy skills through age thirteen.

Hart and Risley (as cited in Charlotte Bilingual Preschool, 2016) initiated the brevity and long-term effects of age three vocabulary acquisition and usage while focusing on environmental

aspects of vocabulary attainment as solely opposed to linking such to heredity. Chyl, Kossowski, Dębska, Łuniewska, Banaszekiewicz, Żelechowska, Frost, Mencl, Wypych, Marchewka, Pugh, and Jednoróg (2018) stated the need for biological study on neural changes regarding "speech and print-speech integration" due to the impact of verbalization interaction and processing (p. 77).

### **Vocabulary as a Reading Predictor**

Buehler and Guignard (2019) extended that a child's age three vocabulary is an indicator of their third-grade reading, which is further impacted by socioeconomic status. Rubiner (2016) stated that economically-disadvantaged parents verbally interact with their children less than non-economically disadvantaged counterparts. The work of Hart and Risley (as cited in Buehler, & Guignard, 2019) indicated a lack of verbal interaction in formative years contributed to academic success or lack thereof at even ages nine and ten and became the widely-used "30 Million Word Gap" platform.

Duke (2019) stated that the basic definition of reading and early reading acquisition no longer constitutes the necessary skills to be proficient in reading by the end of third grade. Skills such as inferencing, identifying themes, writing from multiple sources, and incorporating text-evidence to justify response are among the many facets of 21<sup>st</sup>-century reading basics (Duke, 2019). Furthermore, LaBerge and Samuels (as cited in Baker, Smolkowski, Katz, Fien, Seeley, Kame' enui, & Beck, 2008, p. 19) hypothesized that comprehension stemmed from reading fluency that allowed for focused content recall. Therefore, intensive early literacy intervention is a key component to closing literacy gaps between economically disadvantaged and non-economically disadvantaged students (Fiester, 2013). Despite the relevancy of pre-education literacy interaction such as high-quality home environments, teacher instruction as noted by

Taylor et al. (as cited in Buckingham, Beaman, & Wheldall, 2014, p. 431) was another bioecological factor in reading achievement between both economically disadvantaged and non-economically disadvantaged students.

### **Reading Instruction Skills**

Taylor et al. (as cited in Buckingham, Beaman, & Wheldall, 2014, p. 431) found that lacking teacher instruction skills also suppresses reading acquisition among economically-disadvantaged students while strong teacher instruction skills supported the opposite. Hattie (2012) argued a comparison between using computers versus not using computers was not a viable method to determining effectiveness; therefore, a study of strong teacher instruction on many economically-disadvantaged students from various bioecological beginnings relative to reading pre-education would methodologically be more viable. For additional prerequisite reading skills, Pikulski and Chard (2005) indicated the correlation between fluency and comprehension that later impacts reading to learn as opposed to learning to read. Effective reading instruction that consists of all needed reading skills that meets individual learning need is imperative for reading proficiency effectiveness (Duke, 2019).

### **From Constructivism to Intervention**

Kaye and Lose (2019) stated that reading acquisition for young children includes constructing meaning, understanding "language structure", and letter and word differentiation. Contrary to their reading acquisition application assigned to children in general, Goodman (as cited in Cambourne, 1976, p. 610) suggested that children learned about attaining information through language prior to formal education, and therefore should also attain meaning from print in a "parallel mode", which argued against a "hierarchy of subskills". Cambourne (1976) commented that Goodman's reading model contradicts constructivist approaches to mainly early

literacy such as the extensive and influential work of Chall, Jacobs, and Baldwin (1990) whose work impacted economically disproportioned students' reading attainment. Chall, Jacobs, and Baldwin (1990) concluded that early literacy instruction in "code emphasis" instead of "meaning emphasis" would later be ahead among economically-disadvantaged students. Lesnick, Goerge, Smithgall, and Gwynne (2010) concluded that struggling readers falling below grade-level early also struggle to meet rigorous academic standards later. In Juell's study (as cited in Simmons, Coyne, Kwok, McDonagh, Harn, & Kame' enui, 2008), findings revealed that students who maintained below grade-level performance when phonemic and decoding skill deficits were present at the end of their first-grade year continued below grade level through fourth grade.

### **Third Grade Proficient Reading Focus**

Grade-level reading by the end of third grade has been a focus for improving literacy since educational policy makers recognized that students learn how to read through third grade and began reading to learn in subsequent grades (Lesnick et al., 2010). However, Duke (2019) indicated a connection without significance between state-mandated testing beginning in third grade and reading proficiently by the end of that same grade. Nonetheless, state policymakers have focused on third grade reading proficiency as the cornerstone of later successes (Buehler, & Guignard, 2019). Rubiner (2016) further supported grade-level reading by the end of third grade as part of the Campaign for Grade-Level Reading, which was a national effort in 2012 among a plethora of interested stakeholders and policymakers. The Campaign for Grade-Level Reading (as cited in Rubiner, 2016, p. 43) revealed that 80% of low-income students do not meet reading proficiency by the end of third grade.

### **Tennessee's Reading Proficiency Proactivity**

According to Stone and the Tennessee Department of Education (2016), student achievement data in 2016 revealed almost half of Tennessee's students in public education were not reading on grade level by the end of their third-grade year. Therefore, the Tennessee Department of Education (2018) mandated a focused literacy intervention to assist those struggling readers in kindergarten through twelfth grade due to the importance of reading proficiently in respective grades and post-secondary education or employment. Additionally, Tennessee's Read to be Ready initiative, established a reading proficiency goal among third-grade students at 75% by 2025 as opposed to the current 37% of students reading proficiently (Tennessee Department of Education, 2016; Tennessee Department of Education, 2020). Allison and Gonzales (2020) reported the commitment of \$68 million to Tennessee's new literacy initiative with a phonics-instruction focus for kindergarten through second grade. TDOE (2020) posted the three goals of this proposed initiative as purchasing "high-quality instructional literacy materials for K-3 students" while providing evidence-based professional development for current teachers and training for new teachers to effectively implement purchased materials.

According to the Tennessee Department of Education (2018), existing trends confirmed an increasing number of non-proficient learners unable to experience grade-level learning and more students diagnosed with learning disabilities (LDs). Although this report included both non-economically disadvantaged and economically disadvantaged students, the latter are more affected by a lack of literacy in the home prior to entering school, which further compounds literacy deficits (Buehler and Guignard, 2019; Charlotte Bilingual Preschool, 2016).

The TDOE's (2015) counter to the proficient reading gap by the end of third grade incorporated a developed intervention program focused on the importance of grade-level reading

by the end of third grade, and principally taking a pro-active approach to academic success for all students, including students with disabilities (SWD). This measure includes screening, intervention, and progress monitoring (Tennessee Department of Education, 2018). Aside from the importance of reading on grade level by the end of third grade, a noticeable increase in student populations receiving special education services also factored into the need for reevaluating effective reading instruction and diagnosing specific learning disabilities (SLDs) (Tennessee Department of Education, 2015). Thus, reading intervention became paramount.

### **Importance of Third-grade Reading Proficiency and Intervention**

Reading proficiently by the end of third grade has both current and long-term effects. The TDOE (2016) explained that proficient reading by the end of third grade affords students with reading skills such as strong decoding that leads to increased comprehension in third grade and subsequent grades. Lesnick et al. (2010) found that learning to read culminates by third grade with reading to learn occurring thereafter. However, Duke (2019) stated that learning from being read to and independent reading before first grade fosters learning from text prior to formal reading instruction, not strictly learning to read. To further extend proficient reading by third grade, Buehler and Guignard (2019) stated that students reading proficiently by the end of third grade master more complex subjects, are more successful learners, and graduate on time.

Contradictorily, Cunningham and Stanovich (1997) found that first-grade reading was a predictor of 11<sup>th</sup>-grade literacy outcomes and thereafter. Despite the contradictions, research and state mandates identify third grade as the year to have mastered reading proficiently. The Campaign for Grade-Level Reading (2020) reported 37 governors and 368 communities in 43 states have committed to focusing on, supporting, and assisting with the third-grade reading proficiency focus. Auletto and Sableski (2018) reported that 17 states included legislation

prohibiting students from entering fourth grade without having mastered proficient reading by the end of their third-grade year with 10 other states allowing retention, but not mandating such. According to the Tennessee State Board of Education's (2019) Promotion and Retention Policy 3.300 pursuant to Tennessee Code Annotated § 49-6-3115, promotion to fourth grade is dependent on mastery of third-grade reading skills per the student's grades or standardized test scores, or participation proof of a local education association (LEA) approved, research-based intervention program prior to beginning the fourth grade year. Hence, third grade reading non-proficiency is no longer acceptable per the state's policy.

### **Effects of Third-grade Reading Non-proficiency**

Tyner (2019) stated that teachers have little time to focus on literacy deficits due to the rigorous standards starting in third grade. In Juell's study (as cited in Simmons, Coyne, Kwok, McDonagh, Harn, & Kame'enui, 2008), prior to Response to Intervention (RtI) implementation in 2004, findings revealed that students who maintained below grade-level performance when phonemic and decoding skill deficits were present at the end of their first-grade year continued below grade level through fourth grade. Hernandez (2011) conveyed that a longitudinal study revealed a four-times likelihood of dropping out of high school as a direct result of non-proficient reading among struggling readers and a six-times probability for the most severe reading strugglers.

Fiester (2010) found an increased lack of interest, concern, and motivation beginning in middle school that stemmed from the inability to master grade-level work, which usually resulted from non-grade-level performance or retention in primary grades. Ng's (2018) work extended the incorporation of student voice, particularly among economically disproportionate student populations, to counter earlier negative experiences reported by Fiester (2010). Buehler and

Guignard (2019) stated that reading on grade level by the end of third grade correlates to being four times as likely to graduate from high school. Therefore, elementary grade-level performance is the foundation for ensuring future academic success and readiness for both college and workforce to sustain self and country. The Campaign for Grade-Level Reading (2020) indicates a link between non-proficiency and generational poverty, broad achievement gaps, and higher dropout rates when students are not proficient by the end of third grade. Lesnick et al. (2010) state that mastering grade-level reading by the end of third grade is imperative for that is precisely when learning to read ends and reading to learn on grade level in subsequent grades is expected.

### **Defining Third Grade Reading Proficiency**

Tyner (2019) supported extending expectations and reading skills by stating that alphabet acquisition, recognition, phonemic correlation, print experience, fluency, and comprehension were essential factors for reading proficiency. Tighe and Schatschneider's (2014) study concluded that third-grade proficient reading consisted of fluency, nonverbal reasoning, verbal reasoning, and working memory factors. Among the four, fluency and verbal reasoning were most important in reading comprehension in third grade (Tighe & Schatschneider, 2014). This study, however, further extended Tennessee's decoding focus for proficient reading. Thus, the TDOE (2016) placed higher expectations on students in kindergarten through third grade by including more rigorous adjacent reading skills such as text meaning and real-world connection in addition to necessary decoding skills.

Buehler and Guignard (2019) defined decoding skills as a culmination of phonemic and phonological awareness in relation to the alphabet and print. Phonological and phonemic skills are defined as the acquisition, recognition, and manipulation of phonemes and syllabic sounds to

form spoken and written words (WETA Public Broadcasting, 2019). Without such skills, proficient reading is difficult throughout schooling and the need for intervention increases. The TDOE (2016) classified decoding as a skills-based reading competency that included alphabet recognition, letter arrangement, word recognition, and fluency, but decoding alone no longer equates to the state's summative assessment required skills for mastery.

### **More Than Decoding**

Before learned skills are assessed throughout each year, foundational reading prerequisites serve as reading proficiency indicators. Tyner (2019) indicated foundational reading skills before entering school as being alphabet recognition and phonemic awareness so that logical progression occurred during kindergarten and first grade. However, many economically-disadvantaged students lack basic foundations in reading before beginning school (Buehler and Guignard, 2019; Charlotte Bilingual Preschool, 2016). In the studied school district, the following economic strands and TNReady scores are reported in Table 1.

**Table 1.**

*2018-2019 Third-grade Socioeconomic Groups' TNReady ELA Reporting Category Totals*

Category	Mastered	On Track	Approaching	Below	Total
Economically Disadvantaged	3	47	95	29	191
Non-economically Disadvantaged	18	62	91	41	203

Note. The above totals represent the third-grade student population among the nine elementary schools in this study sent via email with datasheet attachment (J. Nave, personal communication, November 11, 2019).

### **Program Selection for Improving Reading Proficiency**

Before national education legislation focused more on reading, Rhodes-Kline and Johnson (1997) questioned the rationale by school districts for non-incorporation of a specified

reading program, Reading Recovery, despite the extensive financial backing by their respective state. The study's methodology included a stratified random sample of school principals defined by small, large, rural, and non-rural schools who were telephone-interviewed by a certified principal familiar with the respective reading program (Rhodes-Kline, & Johnson, 1997). Of the 54% of non-incorporated reading program schools, six different non-financially based reasons were given for not implementing the specific reading program; no effectiveness-based reason was stated in findings (Rhodes-Kline, & Johnson, 1997). Those decision influences were: Method and philosophy of program, loyalty to current implemented program, loyalty to employees, program developer loyalty, research results, and being a balanced program (Rhodes-Kline, & Johnson, 1997).

Jayroe and Brenner (2002) used case study and observation to study a reading program purchasing decision regarding three programs for an academically struggling, economically disadvantaged rural school district. Through grant writing, the studied school district purchased three reading programs for kindergarten through eighth grade (Jayroe, & Brenner, 2002). The findings, based on interviews, revealed 10 reasons (response to low test scores, familiarity with particular materials, grant-writing assistance from vendors/publishers, technology incorporation, funding, alignment or correlation to standards, state education agency facilitation, research-based, administrative influence, and teacher preference) for purchasing the three programs, and none of the reasons stated were based on independent research for program effectiveness (Jayroe, & Brenner, 2002).

Fast forward almost two decades and the problem of choosing the most effective reading intervention program remains. The two studies above focused on, in traditional definitions of school district identification as either rural or urban, decision-making for rural districts. Similar

conclusions were reached. Auletto, and Sableski (2018) conveyed the same problematic question that addressed through research how an urban school district chose a reading program for their struggling readers. In this study, the respective state's education department supplied an approved list of vendors that met more rigorous criteria than previous decades. Interestingly, this study included one of the same reading programs from the first mentioned study, Reading Recovery, based on the work of Dr. Marie Clay (as cited in Auletto, & Sableski, 2018), which met the stringent standards established by the U. S. Department of Education's (ED) Institute of Education Sciences (IES) What Works Clearinghouse (WWC) (n.d.).

To attain reading proficiency, determining which reading program and intervention to purchase is a considerable feat for financially limited school districts like the one in this study. For example, Harrelson and Greer (as cited in Auletto and Sableski, 2018, p. 238) reported associated costs for the Reading Recovery program as \$3,750 per student and approximately \$10,550 per trained teacher. Per the Reading Recovery Council of North America (n.d.), the two reading program goals are to lessen the financial burden of program costs for school districts while effectively improving literacy achievement among struggling first-grade students. According to the program's website (Reading Recovery Council of North America, n.d.), approximately three-quarters of first-grade students who complete the 12- to 20-week, one-on-one program achieve grade-level reading. According to the Institute for Multi-Sensory Education (as cited in Auletto and Sableski, 2018, p. 241), the Orton Gillingham program, a multi-sensory approach to reading, cost \$975 per training session and a \$50 processing fee. Hwee and Houghton (2011) reported significant findings of their multivariate analysis of variance study of the Orton-Gillingham multi-sensory approach on Singaporean dyslexic students. As stated by the Institute for Multi-Sensory Education (2019), Dr. Samuel Orton and

Anna Gillingham developed this multi-sensory program in the 1930s that chunked reading and spelling into letter-sound relationships and scaffolded skills to eventually culminate into reading. The IMSE (2019) promotes the Orton-Gillingham method for use with all students, not just dyslexic students. The multi-sensory approach as stated by the Institute for Multi-Sensory Education (2019) includes chunking of letters and sounds into smaller groups while incorporating four of five senses to assist in letter-sound connections. Despite the costs of both widely used programs, what is not in question is the relevancy of improving reading in the early elementary grades for all students to increase later successes academically and professionally.

Consequently, Hollands, Kieffer, Shand, Pan, Cheng, and Levin (2016) concluded a lack of a business mindset among school districts relative to purchasing while including a holistic cost-effectiveness design for reading program selection. Ediger (2010) questioned which program benefits students to achieve reading proficiency by the end of third grade and indicated this consideration as a dominating factor for stakeholders regarding purchasing. Buehler and Guignard (2019) connected stakeholders to reading on grade level by the end of third grade as a directive for financial decision making.

### **Literacy Curriculum Materials**

Concordia University – Portland and The Room 241 Team (2018) recognized, however, that mass-produced materials with scripted formats labeled with either terms 'aligned' or 'correlated' often purchased by schools districts to meet rigorous content standards and expectations, schools still have students who are struggling readers. Curriculum publishers either 'align' their textbooks with state standards or 'correlate' textbooks to state standards. According to Squires (2012), alignment ensures that state standards and assessment-style questions are embedded within the program materials provided to classroom teachers.

Correlation only suggests a relation to state standards (Squires, 2012). Contrary to Squires' (2012) study aligning materials, state standards, and academic achievement, reading proficiently remains at a critical level especially among the economically disadvantaged despite textbook publishers' standards alignment or correlation (Concordia University – Portland, & The Room 241 Team, 2018).

### **Government Assistance in Decision Making**

As a result of educational research disunity for years, the IES launched WWC in 2002 to assist interested stakeholders in researching effective practices and policy for state, district, and school implementation (U. S. Department of Education, Institute of Education Sciences, & What Works Clearinghouse, n.d.). Subsequently, with Every Student Succeeds Act (ESSA) of 2015 came high expectations for increasing student achievement through tier labeling of program-related research. ESSA Tier 1 and ESSA Tier 2 indicate the level of effectiveness as determined by meeting standards, statistically significant positive effect, number of students in either tier, and number of sites that meet either tier (U. S. Department of Education, Institute of Education Sciences, & What Works Clearinghouse, n.d.). While ESSA correlates reading programs and stringent design expectations, application remains paramount through early reading intervention to culminate in reading proficiently by the end of third grade.

### **Selected Reading Program for Studied School District**

Stakeholders representing this study's school district chose to implement a small-group differentiated reading program that focused on K-3 reading. This program, developed by Beverly Tyner and Sharon Green (2005), was designed to provide students with multiple opportunities for reading interaction with instructional level text. According to Tyner and Green

(2005), such text is one that one that a student can understand with teacher support within a differentiated reading classroom. Differentiation, according to Tyner and Green (2005), is needed to meet the varying literacy levels among students. The overall program design, based on a constructivism approach through learning levels, includes "fluency instruction, word study instruction, and comprehension instruction" to be used among small, differentiated reading groups (Tyner, & Green, 2005, p. 7). While Tennessee's (2015) Response to Instruction and Intervention (RtI<sup>2</sup>) has an ever-present decoding focus, the small-group differentiated reading model adopted by this school district uses word study to encompass layering of alphabet letter-sound relationships, spelling pattern relationships, and an affixes-meaning relationship of words (Tyner, & Green, 2005). This small-group differentiated reading program serves general reading instruction and intervention instruction needs for grade-level, beyond grade level, and struggling readers through reading development stages. According to Tyner and Green's (2005) philosophical approach to reading, third grade students should be in the "Evolving Reader Stage" that transitions from decoding, which includes an extensive sight word vocabulary, blending of word parts for unfamiliar word reading, and less vocalization of sound to unfamiliar words, to fluency and comprehension.

The instructional components of this program include ability-grouping of students in small groups, generally an optimal number of four students, but up to six if needed, to provide direct instruction in fluency, word study, and comprehension for 45 minutes. According to Tyner and Green (2005), students in the third grade are typically grouped as evolving readers, which is noted as a transition from learning to read to reading to learn. While the program has program-specific summative assessments that are criterion-referenced to the small-group differentiated reading program, an assessment comparable to either the Star Reading or the

TCAP TNReady ELA does not exist. As a result, the assessment programs selected for this study are the two programs used by the district as a universal screener for both the small-group differentiated program and RTI<sup>2</sup> tier groups and the high-stakes state-mandated assessment, STAR Reading and TCAP TNReady ELA, respectively.

Again, grade-level reading by the end of third grade has been a focus for improving literacy since educational policy makers recognized that students learn how to read through third grade and began reading to learn in subsequent grades (Lesnick et al., 2010). Tyner and Green (2005) acknowledged fluency and comprehension in their "Evolving Reader Stage" (p. 7) that transitions readers to reading more complex texts independently. However, Allington, McCuiston, and Billen (2015) reported that readability of 95% accuracy produced greater reading gains even if reading material was not deemed complex. The reading program developed by Tyner and Green (2005) integrated reading, spelling, and writing with tutoring intervention to differentiate instruction for all readers within a given classroom. Although reading standards have drastically improved from basic reading skills, reading proficiency has not (Reilly et al., 2019). Thus, a need for reading intervention for struggling readers. While this small-group differentiated program is designed to individualize reading instruction for all students, gauging student academic growth in third grade is through oral reading fluency (ORF) (Tyner, & Green, 2005).

### **Oral Reading Fluency**

Aldhanhani and Abu-Ayyas (2020) stated that weak oral reading fluency in the earlier stages of literacy learning results in a compounding issue that appears in multiple grades and in multiple subjects. Rasinski defined (as cited in Aldhanhani, & Abu-Ayyas, 2020, p. 379) ORF as measuring "...the number of: correct words, incorrect words, pauses, repetition of words or

phrases and finally mean length of utterance" in a specific timeframe. According to Tyner and Green (2005), ORF is assessed for the small-group differentiated reading program through etymological phrasing, understanding roles of punctuation in reading aloud, reading aloud rate, and reading expression that is gauged against a recommended mastery scale three times per academic year: fall, winter, and spring. Additionally, the assessments are weighed against a prescribed word bank based on their initial universal screener results (Tyner, & Green, 2005).

Jenkins, Hudson, and Johnson (as cited in Kilgus, Izumi, von der Embse, Van Wie, Eklund, Taylor, and Iccarino, 2019, p. 262) defined universal screener as being a periodic assessment tool administered to a population that determines established qualifying academic attainment in order to differentiate instruction and learning for students. According to the U. S. Department of Education (2017), universally screening students was mandated for states to implement in Every Student Succeeds Act under Title I, Part A. According to the National Center on Intensive Intervention at the American Institutes for Research (2019), 16 programs for universally screening students are scored based on classification accuracy, technical standards, and usability features for convincing evidence, partially convincing evidence, unconvincing evidence, or data unavailable. Of the 16 universal screening programs measured, i-Ready Diagnostics, Map Growth, and STAR Reading had convincing evidence for all three periodic testing times: fall, winter, and spring (National Center on Intensive Intervention at the American Institutes for Research, 2019). Consequently, STAR Reading is used as interim assessments for universally screening students and as a predictor assessment in this study.

### **Renaissance Learning's STAR Reading**

According to Renaissance Learning, Incorporated (2015), the STAR Reading Enterprise norm-referenced assessments measure "...a wide range of discrete reading skills that are aligned

to state and national curriculum standards” that are platform-housed in daily progress monitoring, periodic progress monitoring, and yearly assessment results (Renaissance Learning, Incorporated, 2015). The STAR Reading Enterprise assessments are standards-based and assess five content domains, 10 skill sets, 36 general skills, and over 470 discrete skills in an electronically adaptive testing format that gauges each subsequent question on the student’s previous response and motivation through “Adaptive Branching” (Renaissance Learning, Incorporated, 2015). According to Renaissance Learning, Incorporated’s (2015) *Technical Manual*, interim assessments can be used to measure academic growth and predict the state’s high-stakes testing scores for students that national, state, and local education agencies analyze for various determinations. This is done through both criterion- and norm-referenced measurement analyzed according to a student’s growth percentile in STAR Reading Enterprise (Renaissance Learning, Incorporated, 2015). Indirectly, students identified through the STAR Reading universal screener determined which students needed the respective small-group differentiated reading instruction and those who required more intensive intervention beyond the district-mandated reading program.

### **Response to Intervention (RtI) Foundations**

Based on the constructs of Response to Intervention (RtI), Preston, Wood, and Stecker (2015) reported historical beginnings in disciplines outside education such as psychology with an emphasis on learning disabilities and behavioral sciences. For decades, identifying and differentiating work for students with learning disabilities in general education classes was based on an academic wait-to-fail model (Tennessee Department of Education, 2015). However, The Education for All Handicapped Children Act of 1975 (EAHC), Individuals with Disabilities Education Act (IDEA) of 1990 and amendments in 2004, No Child Left Behind (NCLB) of

2001, Reading Excellence Act of 2001, and Every Student Succeeds Act (ESSA) of 2015 all shaped the current multi-tier program. This differentiated program consists screening, identifying, instructing, progress monitoring, and academic responsibility for all students while using related assessment data for identifying specific learning disabilities (SLD) and services (Preston, et al., 2015). Therefore, a differentiated intervention model was suggested that accompanied specific academic standards resulting in a legislative culmination that impacts reading fundamentals and the acquisition of rigorous reading skills.

### **Legislative Impact on RtI**

Prior to No Child Left Behind (NCLB) in 2002 and the reauthorization of Individuals with Disabilities Education Act in 2004 (IDEA), Canter (2004) wrote that diagnosing students with SLDs was based on a discrepancy model between their intellectual ability and academic performance. NCLB and IDEA both contributed to diagnosing SLDs from an ability-achievement discrepancy model to an intervention model indicative of specific intervention needs (Canter, 2004). Tennessee Department of Education's (2017) resulting intervention intent was to decrease the student population for special education services by pinpointing targeted learning deficits among the lowest-performing students, intervening accordingly, and increase reading proficiency among all students K-12.

The Tennessee Department of Education (2016) reported that at least half of all third graders enter fourth grade without becoming a proficient reader by third grade's end. The Tennessee Department of Education (2018) later reported that only one-third of all public school third graders are reading proficiently even though NCLB mandated a 100 percent reading proficiently rate by 2014. In 2014, Response to Instruction and Intervention (RtI<sup>2</sup>) was initiated

in Tennessee to take a proactive approach to reading proficiency and special education identification (Tennessee Department of Education, 2015).

### **Defining Specific Learning Disabilities (SLD)**

The U. S. Department of Education (2018) defined learning disabilities as a psychological difference that may impede a student’s ability to process expected literacy norms relative to reading, speaking, spelling, thinking, and writing without the influence of physiological deficits such as vision or hearing impairments. According to the Tennessee Department of Education’s (n.d.-a) Data Downloads and Requests State Accountability and State Assessments, Table 2 and Table 3 represent Tennessee’s student population, students with disabilities (SWD) population, and respective percentages from 2013 through 2019 for third grade, respectively.

**Table 2.**

*State and District Student Population Comparison: Third Grade 2013-2015*

SY	Total	SWD	%	District Total	District SWD	%
2013-2014	74,831	10,450	13.9	416	65	15.6
2014-2015	76,534	9,736	12.7	431	82	19.0

Note. The Tennessee Department of Education’s Data & Downloads (n.d.-a) State Assessments reported non-aggregated population data for the years above. The Tennessee Department of Education suspended TCAP/TNReady testing for grades three through eight; therefore, no data is available (Tennessee Department of Education, n.d.-a).

**Table 3.**

*State and District Student Population Comparison: Third through Fifth Grade 2016-2019*

SY	Total	SWD	%	District Total	District SWD	%
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**Table 3** (Continued).

2016-2017	230,328	27,955	12.1	1,191	180	15.1
2017-2018	225,064	23,826	10.6	1,164	136	11.7
2018-2019	221,005	25,294	11.4	1,152	151	13.1

Note. The Tennessee Department of Education's Data & Downloads (n.d.-a) State Assessments reported aggregated population data for the years above. The Tennessee Department of Education suspended TCAP/TNReady testing for grades three through eight; therefore, no data is available (Tennessee Department of Education, n.d.-a).

### **Tennessee's Response to Instruction and Intervention (RtI<sup>2</sup>)**

Paradoxically, Tennessee fully implemented a specific intervention initiative to meet the needs of all students; not only academically struggling students or SWD. Kirkham and Lampley (2014) reported this intervention initiative was in direct response to the federal government's offer to state education agencies (SEAs) an opportunity to develop their own model for addressing both special education and intervention for struggling students. Tennessee's RtI<sup>2</sup> mandated implementation in 2014 was designed to identify and assign students to one of three respective tiers through a universal screening process administered at the beginning, middle, and end of each school year. Despite universal screener results, a student's tier placement is not fixated; mobility among tiers depend on academic need from either progress monitoring data or universal screener results (Tennessee Department of Education, 2015). Consequently, the TDOE (2016) stressed stringent intervention strategies to impact kindergarten more effectively through third-grade reading after a year's analysis of RtI<sup>2</sup> implementation reading programming. Although this reading intervention was state-mandated, initial funding was not earmarked for such (Tennessee Department of Education, 2018).

### **Education Funding and RtI<sup>2</sup>**

Cohen-Vogel and Cohen-Vogel (2001) reported on the inequitable funding practices in Tennessee through its former Tennessee Foundation Program until challenged and declared unconstitutional in *Tennessee Small School Systems (TSSS) v. McWherter* in 1993. As a result, Tennessee's Basic Education Plan (BEP) was introduced as the new funding formula. Although RtI<sup>2</sup> is state-mandated, funding remained nonexistent from initial implementation until 2018, which still placed a financial burden on school districts. Funding is only relative to positions, not required intervention programs (Tennessee Department of Education, n.d.-b). Therefore, intervention programs are quite costly for school districts facing decreasing funding due to decreasing student enrollment. Because school districts lack adequate funding to hire certified personnel specifically for RtI<sup>2</sup>, Hauerwas and Goessling (2008) suggested many districts use non-certified personnel in combination with certified professionals as a team of interventionists to meet the requirements of RtI<sup>2</sup>. However, a focus of the RtI<sup>2</sup> initiative is small-group instruction with a certified teacher for one hour of intervention per day (Tennessee Department of Education, 2015). Title I schools in the school district chosen for this study utilize their respective certified teacher while also supplementing with paraprofessionals to assist with intervention classes. This is in direct relation to the number of students identified as needing intervention. Aside from ensuring RtI<sup>2</sup> is fully staffed with interventionists, another problem for financially constrained districts is determining which intervention programs to purchase considering their budgetary constraints versus the need for the most effective reading improvement program to achieve grade-level reading proficiency by the end of third grade.

### **RtI<sup>2</sup> Framework Goals**

Tennessee Department of Education (2015) reported in 2013 that the established alternative framework goal was to increase reading proficiency in primary grades, to ultimately

increase student achievement in latter grades, and to equitably provide intervention in deficit areas for all students in grades K-12. After the intervention analysis, the TDOE (2016) further introduced the state's reading proficiently initiative of 75% by 2025, Read to be Ready, by the end of the third-grade year. While increasing reading skills in elementary grades was the main focus, an additional intention of RtI<sup>2</sup> was the proper identification and testing of students who are in fact in need of Special Education services (Tennessee Department of Education, 2015). Only after a universal screener for tier placement was conducted and three evidence-based intervention strategies have been attempted for student improvement could students be referred for respective services or per parent request (Tennessee Department of Education, 2013). The Tennessee Department of Education (2018) would later report how the increasing special education population led to more rigorous identification protocols, reading interventions, and support of identified learners through twelfth grade while more closely determining if general education students should be referred for Special Education services.

### **RtI<sup>2</sup> Focus on Reading Improvement for All Students**

The TDOE (2016) reported RtI<sup>2</sup> reading improvement directives as interpreting and understanding collected data from universal screeners, progress monitoring, and end-of-year summative assessments to holistically determine intervention to meet individual student needs. To further broaden the effectiveness scope, the TDOE (2016) suggested reading interventionists from either inside the school from among staffed certified personnel or specifically hiring from outside while adopting and conveying a genuine commitment to improving reading achievement for all learners through intervention. While there exists immediate reading proficiency needs, the long-term scope is to ensure post-secondary readiness.

### **College and Career Readiness**

According to Fiester (2010), in 2007, the approximate cost to the United States for a high school dropout was \$260,000. The Graduation Alliance (n.d.) stated in 2017 the cost was \$292,000, which includes loss of earnings, paid taxes, and productivity or service. Additional costly unintended consequences are also associated with high school dropouts such as teenage pregnancy, crime potentiality, and drug abuse. However, the most alarming association is the lack of adequate high school graduates to sustain our nation's workforce and military in both skilled and unskilled labor (Fiester, 2010). With the increasing demands of local, national, and global competition in a technology-driven workforce and military, having qualified workers is imperative. Despite increased rigorous curriculum among state public education agencies, graduating seniors still require remedial courses upon college entrance. Butler (2019) reported in *The Tennessee Star* that a Tennessee Higher Education Commission (THEC) presentation to the Tennessee Legislature revealed approximately 30 percent of college students required reading remediation for the 2016-2017 academic year. This statistic is despite both federal and state intervention initiatives and substantial funding to improve college and career readiness in public education. Before this revelation, vested stakeholders such as the governor, state legislators, Tennessee Department of Education administrators, higher education administrators, discipline specialists, and local education personnel, as reported by McMahon (2011), established Tennessee's intervention initiative to counter the lack of post-secondary college and career readiness. However, The THEC legislative presentation concentrated on remediation among college students, not technical education data, career-bound student data, or high school dropout rates. Ironically, the high school dichotomy of graduating or not possesses similarities in educational achievement cause and effect. High school dropout causes are more indicative of academic success and importance in the elementary years with a direct link to proficient reading.

## **Increasing Early Reading Motivation**

Hattie (1999, August) stated that teachers and students collaborate to develop academic goals that includes student voice. Ng (2018) further expounded the relevancy of such for economically-disadvantaged students by revealing the increased literacy engagement among economically disproportioned when they are included in pedagogical decisions. Helping develop intrinsic literacy motivation is imperative to increasing reading proficiency among economically disadvantaged according to Ng and Graham (2018). Despite classroom pedagogical practices, both intrinsic and extrinsic variables are lacking yet needed among respective subgroup throughout their elementary, middle, and high school years (Fiester, 2010).

## **Summary**

Improving reading proficiency remains a focus among national, state, and local education agencies to meet the global demands on careers, college completion, and military servitude (Fiester, 2010). Conley and the Educational Policy Improvement Center (2012) conveyed a definition correlation between career and college readiness being the rigorous foundational skills needed in post-secondary endeavors. Those foundational skills are embedded in early literacy achievement (Buehler, & Guignard, 2019). Special Education reform via congressional legislation impacted general education through a tiered-model intervention program, the impact of grade-level reading by third-grade's end, and effective reading strategies (U. S. Department of Education, 2017). With a literacy achievement focus for all students, TDOE (2015) implemented their intervention mandate, RtI<sup>2</sup>, to meet such demands despite a lack of funding for research-based programs or any suggested reading intervention programs meeting stringent criteria. Therefore, school districts faced associated challenges and implemented RtI<sup>2</sup> until earmarked funding offset intervention costs for personnel; however, no additional funding for

programs was allocated (Tennessee Department of Education, 2018). The decision faced by the study-focused school district was which evidence-based reading program to purchase that would most benefit all students based on the importance of reading by third-grade end and being college and career ready. That decision resulted in the small-group differentiated reading program implemented in 2016. With a continued focus of improving literacy and closing achievement gaps among third-grade students, determining a relationship among administered assessments and analyzing data correctly demonstrates predictability potentiality to further increase student academic growth in third grade.

## CHAPTER 3

### Research Design and Methods

#### Introduction

As a result of increased literacy demands nationwide, states such as Tennessee, focused on third grade reading proficiency (Buehler, & Guignard, 2019). According to Butler (2019), the reading program and intervention focus was a result of the career and college lack of readiness among high-school graduates in Tennessee. In 2016, a small-group differentiated reading program and intervention was implemented in the selected school district's nine elementary schools in rural East Tennessee that focused on small-group differentiated reading instruction to improve grade-level reading by the end of third grade (Thompson, 2016). This district initiative was at the direction of the TDOE's (2013) RtI<sup>2</sup> mandate. Despite the mandate, no initial or specific programs or funding were provided. The only reading program descriptive was that it be research-based (Tennessee Department of Education, 2013). The term research-based was a derivative of evidence-based, which was associated most notably, with NCLB (Cohen-Vogel and Cohen-Vogel, 2001). Therefore, faced with declining student enrollment, this school district made the decision to purchase the small-group differentiated reading program with consultations (Thompson, 2018).

Since 2016, the selected school district has implemented this respective small-group differentiated reading program as the main reading program for Tier I instruction along with intervention for both Tiers II and III. Due to the nature and length of implementation of the reading program, the purpose of this predictive correlational study was to determine relationship between overall third grade Tennessee Comprehensive Assessment Program (TCAP) TNReady English Language Arts (ELA) results and STAR Reading scores for specified Title I elementary

schools within a Northeast Tennessee school district for school year (SY) 2018-2019 based on adopted small-group differentiated reading program that has been utilized since the 2016-2017 school year. The study includes archived data from the district-used universal screener, progress monitoring data, and end-of-year state-mandated test data for third grade ELA. Furthermore, this study highlights the specific relationship among STAR Reading Normal Curve Equivalent (NCE) scores and TCAP TNReady ELA scaled scores. The 2018-2019 school year was selected based on having implemented the small group differentiated reading program for three full academic years within the school district beginning in 2016-2017. This chapter includes methodology specifics such as population, sample, data collection, and analysis processes.

### **Rationale for Quantitative Methods**

A predictive-correlational study was used for this research. A predictive-correlational approach to research provides the opportunity for researchers to design a single study that indicates whether the relationship is statistically significant and the strength of the relationship (Muijs, 2011). Using a quantitative methods approach to this predictive-correlational study provides a more comprehensive understanding of both TCAP TNReady ELA scores among third grade students and the STAR Reading assessments regarding the implemented small-group differentiated reading program mandated in 2016. This design is based on a realist ideology that truth in research exists and will be revealed through objective, quantitative methodology (Muijs, 2011).

### **Quantitative Methodology**

Archived data, exported into Microsoft Excel to exclude any identifiable information, in the form of TCAP TNReady third grade ELA scores for 2018-2019 from the TDOE's (2019) district assessment data file in combination with district-housed TCAP TNReady ELA reports

and STAR Reading assessment scores for the Fall and Spring assessments serve as research data for this study. The TCAP TNReady ELA assessment was administered by certified personnel, as mandated by the TDOE, but STAR Reading assessments administration was done by unspecified district personnel. The TCAP TNReady ELA summative assessment for third through eighth grades was administered during the state-approved testing window of April 15<sup>th</sup> through May 3<sup>rd</sup>, 2019. The STAR Reading assessments were administered during the Fall of the school year (Fall 2018) and at the end of the third nine-weeks grading period prior to the TCAP TNReady assessments (Spring 2019). The first STAR Reading assessment served as the universal screener for RtI<sup>2</sup> tier placement until progress monitoring determined student progression into next tier. Due to assessment constructs, six quantitative research questions guided the research analysis.

### **Quantitative Research Questions**

The following 10 research questions guided the analysis of data:

1. Are the third-grade STAR Reading Fall 2018 exam and the third grade STAR Reading Spring 2019 exam significant predictors of the TCAP TNReady third-grade ELA exam?  
H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam.
2. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for female students?  
H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for female students.

3. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for male students?

H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for male students.

4. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for economically-disadvantaged students?

H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for economically-disadvantaged students.

5. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for non-economically disadvantaged students?

H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for non-economically disadvantaged students.

6. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores.

7. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for female students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for female students.

8. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 normal curve equivalent scores for male students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for male students.

9. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students.

10. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students?

H<sub>0</sub>: There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students.

### **Instrumentation**

Archived data from three separate summative assessment score reports were used as instrumentation for this predictive correlational study. For SY 18-19, TCAP TNReady ELA scaled scores for third grade and the STAR Reading assessment NCE score results from assessments administered at the beginning of the academic year and at the end of the prior to TCAP TNReady assessments were chosen. Although the STAR Reading assessment is also administered at the end of the first semester, the assessment serves as a progress-monitoring tool as opposed to a TCAP TNReady predictor tool. Both assessments are considered aligned with Tennessee's academic standards as a component of accountability for which curriculum is designed as opposed to correlated to respective state standards.

**STAR Reading.** Renaissance Learning, Incorporation's (2018) in-house study to determine validity and reliability was based on the 2016-2017 SY. Data provided by the TDOE and gathered from each school district with a range of 95% to 105% of students with assessment scaled scores from STAR Reading assessments and scaled scores from the TCAP ELA assessments were analyzed for correlation and predictability with a sample of 32,920 students from 308 schools (Renaissance Learning, Incorporated, 2018). The STAR Reading assessments were administered online by unknown administrators for immediate RtI<sup>2</sup> tier determination and

as an achievement predictor on the TCAP ELA assessment. According to Renaissance Learning, Incorporated (2015), the assessments use adaptive, fixed-length tests on a student's current level of proficiency with questions that are personalized based on each student's response that predicts the next question's difficulty level based on past and present test performances. STAR Reading Scaled Scores are universal for every assessment and grade, K-12 (Renaissance Learning, Incorporated, 2015). Renaissance Learning, Incorporated's (2018) STAR Reading predictive correlation study to the TCAP ELA assessment revealed a strong .78 correlation in achievement predictability. The U.S. Department of Education's National Center on Intensive Intervention (2018, October) reported that STAR Reading progress monitoring demonstrated "convincing evidence" for both reliability and validity. As a result of the predictive correlation study, scaled score equivalencies for Star Reading and TCAP TNReady ELA assessments are displayed in the Table 4 (Renaissance Learning, Incorporated, 2018).

**Table 4.**

*STAR Reading Scaled Scores and TCAP TNReady Reporting Equivalencies*

Scaled Score Ranges	Reporting Equivalencies
$\geq 677$	Mastered
505-676	On Track
349-504	Approaching
$<349$	Below

Note. The scaled scores and reporting category equivalencies were not used as data for this study.

**STAR Reading Normal Curve Equivalent Scores.** According to Renaissance Learning, Incorporated (2015), normal curve equivalent scores (NCEs) "...are useful for purposes of statistically manipulating norm-referenced test results, such as when interpolating

test scores, calculating averages, and computing correlation coefficients between different tests” (p. 127). As a result, NCEs are used as the STAR Reading data for this study.

**TCAP TNReady ELA.** According to TDOE’s (n.d.-d) *Overview of Testing in Tennessee*, the TCAP is state required to meet Every Student Succeeds Act (ESSA) of 2015 and Tennessee Code Annotated (T.C.A.) § 49-1-602 for accountability and reporting mandates. Additionally, the testing overview (Tennessee Department of Education, n.d.-d) indicates four subparts in ELA to assess reading skills in both literature and informational texts. Those skills include close reading, text analysis, answer questions with text evidence, and demonstrate appropriate grammar skills (Tennessee Department of Education, n.d.-d). Because specific skills are assessed compared to the Tennessee State Standards for English Language Arts, the mandated assessment is considered criterion-referenced (Tennessee Department of Education, 2019). The TCAP Assessment Blueprint English Language Arts Grade 3 (Tennessee Department of Education, n.d.-d) indicates the reporting categories and percentages of tested items related to each category as the following: Reading: Literature (32% - 34%); Reading: Informational Text (32% - 34%); Reading: Vocabulary (13% - 18%); Reading: Conventions (13% - 14%); Reading: Written Expression (2% - 4%). For the purpose of this study, Reading: Written Expression is excluded because this testing component is not the focus of this study. TCAP TNReady scoring groups are reported in Table 5.

**Table 5.**

*TCAP TNReady ELA Score Reporting Groups*

Reporting Levels	Scaled Score Range	Reporting Category
Level 1	200-321	Below
Level 2	322-358	Approaching

**Table 5 (Continued).**

Level 3	359-390	On track
Level 4	391-450	Mastered

Note. The reporting levels, ranges, and categories are stated in the TDOE (2018) 2018-2019 ELA Grade 3-5 Assessment Overview were not used as data for this study.

The TCAP TNReady ELA assessment was administered during the state-approved testing window, April 15, 2019 through May 3, 2019. Administration of the assessment was by a certified school personnel, per state requirement, while proctored by either a classified school employee or volunteer outside district employment. Certified personnel were provided with scripted instructions for administering the exam, which was given in four subparts. The Written Expression, administered on April 10, 2019, constituted subpart one. ELA subparts two, three, and four were administered April 15<sup>th</sup> – 17<sup>th</sup>, 2019. Those subparts were used in composite scoring for TCAP TNReady ELA and used for this study. Composite scoring consists of the following reporting categories: Mastered, On Track, Approaching, and Below. The Tennessee Education Association (n.d.) stated that testing validity is done through certified personnel determination of standards alignment followed by field testing and subsequent operational implementation. Assessment questions are evaluated annually by certified personnel (Tennessee Education Association, n.d.). Reliability is also considered existent because of standards alignment and skills demonstration (Tennessee Education Association, n.d.).

#### **TCAP TNReady and STAR Reading Reporting Category Differences**

Renaissance Learning's (2018) study correlating respective reading summative assessments to the TCAP TNReady ELA state-mandated summative assessment resulted in slight differences in scaled score ranges. However, reporting categories remained the same. Table 6 reveals those discrepancies.

**Table 6.***TCAP TNReady and STAR Reading Scale Range Differences and Reporting Categories*

TCAP TNReady Scale Ranges	STAR Scale Ranges	TCAP TNReady and STAR Reading Categories
391-450	> 677	Mastered
359-390	505 – 676	On Track
322-358	349 – 504	Approaching
200-321	< 349	Below

Note. The TCAP TNReady and STAR Reading Reporting Categories are based on the correlation study by Renaissance Learning (2018) and were not used as data for this study.

### **Data Collection and Study Procedures**

Prior to conducting this study, a Milligan College Institutional Review Board (IRB) study proposal was submitted and approved (see Appendix A) based on permission from the school system's Director of Schools (see Appendix B). Considering only archived data was used for this study, no informed consent was needed. Individual student TCAP TNReady data from school district's Director of Federal Projects and Testing and STAR Reading data from the Director of K-12 Curriculum and Instruction and RtI was attained for this study's use. No risk was associated with this study because no student-related personally-identifiable information was obtained outside of gender. To further attain the needed data, a Tennessee Department of Education's Data Management Office's online request was submitted due to a lack of identically reported TCAP TNReady reporting data report for public access. This submission required IRB approval verification through document upload, which was completed. However, no response was received at the time of testing for this study. As a result, true random selection was performed to determine participants and data.

## Population

The study's population came from the nine elementary schools in the participating school district, Grades 3-8 for the 2018-2019 SY. Further subgroup totals revealed that White students comprised 94.8% of the elementary schools' population while the remaining 5.2% were American Indian/Alaskan Native, African American or Black, Asian, Hispanic, or Native American. Further subgrouping included English Learners with Transitional 1-4, Gifted, and Students with Disabilities for an aggregated total of 15.8%. Table 7 displays district demographic data.

**Table 7.**

*District Tested Population Data for the 2018-2019 SY*

Categories	Totals	%
Gender	2,326	100
Males	1,188	51.1
Females	1,138	48.9
SES Status		
ED	1,107	47.6
Non-ED	1,219	52.4

*Note.* The table includes students with less than 50% enrollment within the district or lacking test data for Grades 3-8. However, socioeconomic totals and respective percentiles are adjusted for that number, which totaled nine students.

## Sample

Stratified random sampling was achieved from among the elementary schools' third grade total TCAP TNReady ELA tested population with a minimum quota of 50% of third grade students for SY 18-19 ( $n = 194$ ). Samples with qualifying criteria were selected from the nine

elementary schools until the minimum 50% quota was obtained between gender, male and female. The sample was limited to a 51.5% quota based on participant data for each assessment: STAR Reading Fall 2018, STAR Reading Spring 2019, and TCAP TNReady ELA end-of-year assessment. Participant data were either retained for random sampling or disqualified from the random sampling process. As a result, 98 males and 96 females represent the random sample 51.5% quota with nine students disqualified from random sampling due to not meeting the 50% enrollment and seven students whose gender or socioeconomic status was missing from the data report for this study. This sampling method was chosen to eliminate bias toward any student groups while including all sub-group classifications (Muijs, 2011). The use of an online random-choice tool was used for sample selection (Textfixer.com, 2007).

### **Random Selection Process**

In order to determine the minimum 50% quota sample, student data were analyzed based on the required two data points from STAR Reading for the 18-19 SY: STAR Reading Fall 2018 and STAR Reading Spring 2019. Student data were grouped according to gender, male or female. All qualifying genders from each of the nine participating schools were typed into the "Generate Random Choices" box separately according to their respective school (Textfixer.com, 2007). Once the "Random Choice" button was activated, that choice was checked for sampling and then immediately removed from the random choices list (Textfixer.com, 2007). This gender-sampling process was completed for all nine schools respective to gender group. As a result of tested third-grade students, the 51.5% quota resulted in 194 students for the sample. Table 8 represents the stratified random sampling for the nine participating schools in this study.

### **Table 8.**

**Table 8** (Continued).

*Random Sampling among the Nine Elementary Schools for the 2018-2019 SY*

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School	Sampled Males	Sampled Females	Total
1	10	7	17
2	9	9	18
3	11	13	24
4	20	28	48
5	13	10	23
6	12	7	19
7	6	7	13
8	7	3	10
9	11	3	14
Totals	98	96	194

---

Note. 190 students did not meet the sampling criteria for STAR Reading assessment data and TCAP TNReady ELA assessment data.

### **Data Analysis**

The researcher used IBM Statistical Package for Social Sciences (SPSS) v25 for data entry and statistical analysis for individual research questions as indicated:

1. Multiple Linear Regression was calculated to determine a relationship between STAR Reading Fall 2018 and STAR Reading Spring 2019 on TCAP TNReady ELA composite results for all students.
2. Multiple Linear Regression was calculated to determine a relationship between STAR Reading Fall 2018 and STAR Reading Spring 2019 on TCAP TNReady ELA composite results for female students.

3. Multiple Linear Regression was calculated to determine a relationship between STAR Reading Fall 2018 and STAR Reading Spring 2019 on TCAP TNReady ELA composite results for male students.
4. Multiple Linear Regression was calculated to determine a relationship between STAR Reading Fall 2018 and STAR Reading Spring 2019 on TCAP TNReady ELA composite results for economically-disadvantaged students.
5. Multiple Linear Regression was calculated to determine a relationship between STAR Reading Fall 2018 and STAR Reading Spring 2019 on TCAP TNReady ELA composite results for non-economically disadvantaged students.
6. A paired-samples *t*-test was calculated to determine a difference in student growth percentile scores of third grade students between the Star Reading Fall 2018 and the Spring 2019 assessments.
7. A paired-samples *t*-test was calculated to determine a difference in student growth percentile scores of third grade female students between the Star Reading Fall 2018 and the Spring 2019 assessments.
8. A paired-samples *t*-test was calculated to determine a difference in student growth percentile scores of third grade male students between the Star Reading Fall 2018 and the Spring 2019 assessments.
9. A paired-samples *t*-test was calculated to determine a difference in student growth percentile scores of third grade economically-disadvantaged students between the Star Reading Fall 2018 and the Spring 2019 assessments.

10. A paired-samples *t*-test was calculated to determine a difference in student growth percentile scores of third grade non-economically disadvantaged students between the Star Reading Fall 2018 and the Spring 2019 assessments.

All analysis significance will be noted under respective research question tables found in Chapter 4.

### **Summary**

The predictive correlational design for this study included data analysis tools to gain an in-depth correlation understanding among the Star Reading assessments and the state's mandated TCAP TNReady ELA assessment for participants who engaged in a small-group differentiated reading program. Data collection, testing, and analysis using IBM Statistical Package for Social Sciences (SPSS) v25 were appropriate for respective research questions and archived data attained from this study's school district administrative personnel. This study had no accompanying risks. The research questions were designed to provide predictive correlational analyses and determine students' academic growth during their third-grade year.

## CHAPTER 4

### Data Analysis and Findings

#### Introduction

The purpose of this predictive correlational study was to determine the relationship between overall third grade Tennessee Comprehensive Assessment Program (TCAP) Reading results and STAR Reading scores for specified Title I elementary schools within a Northeast Tennessee school district for the school year (SY) 2018-2019 while participating in a small-group differentiated reading program. STAR Reading normal curve equivalents (NCEs) and TCAP TNReady ELA scaled scores were used. Because school district archived data were analyzed from the TDOE and the school district, quantitative analysis for correlation strength and direction was chosen. Associated quantitative data are represented in relative tables.

The following 10 research questions guided the analysis of data:

1. Are the third-grade STAR Reading Fall 2018 exam and the third grade STAR Reading Spring 2019 exam significant predictors of the TCAP TNReady third-grade ELA exam?
2. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for female students?
3. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for male students?
4. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for economically-disadvantaged students?

5. Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for non-economically disadvantaged students?
6. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores?
7. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for female students?
8. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 normal curve equivalent scores for male students?
9. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students?
10. Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students?

### **Research Study Demographic Data**

The population ( $N = 2,326$ ) for this study was the total number of elementary school students in grades 3-8 among the nine elementary schools with the sample ( $n = 194$ ) equal to 51.5% of third-grade students for the 2018-2019 SY. This study's demographic data included

gender, male and female, and socioeconomic subgroups, economically and non-economically disadvantaged students. The random sample data are displayed in Table 9.

**Table 9.**

*District Randomized Sample Demographic Data*

Category	<i>n</i>	% of Sample
Gender		
Males	98	50.5
Females	96	49.5
Socioeconomic Status		
Economically disadvantaged	105	54.1
Non-economically disadvantaged	89	45.9

The TCAP TNReady ELA assessment scaled scores ( $M = 346.655$ ,  $SD = 28.582$ ) are stated. Table 10 provides both means ( $M$ ) and standard deviations ( $SD$ ) for STAR Reading Fall 2018 NCEs and STAR Reading Spring 2019 NCEs.

**Table 10.**

*Means and Standard Deviations for STAR Reading NCEs*

Assessment	<i>M</i> NCE Scores	<i>SD</i>
STAR Reading Fall 2018	47.039	17.219
STAR Reading Spring 2019	54.615	16.353

### Research Findings

**Research Question 1.** Are the third-grade STAR Reading Fall 2018 exam and the third grade STAR Spring 2019 exam significant predictors of the TCAP TNReady third-grade ELA exam?

H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam.

Multiple linear regression was calculated to determine if third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams were significant predictors of the TCAP TNReady third-grade ELA exam. No significant regression equation was found [ $F(2, 191) = 2.713, p = .069$ ] with an  $R^2$  of .028. Therefore, the null hypothesis was retained. This finding suggests 2.8% of the variance in TNReady ELA composite results could be explained by the predictor variables. Results also suggest other variables could explain 97.2 % of the variance in TNReady ELA results. Due to results that were not significant, determining the strongest predictor variable was not relevant. However, the following *Beta* scores were examined. STAR Reading Fall 2018 had a *Beta* score of .020,  $p = .859$ . STAR Reading Spring 2019 had a *Beta* score of .151,  $p = .176$ . The results are displayed in Table 11.

**Table 11.**

*Coefficients for STAR Reading Fall 2018 and Spring 2019*

Variable	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>Significance</i>
STAR Reading Fall 2018	.033	.020	.178	.859
STAR Reading Spring 2019	.263	.151	1.360	.176

*Note.*  $p = <.05$ .

**Research Question 2.** Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for female students?

H<sub>0</sub>: The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for female students.

Multiple linear regression was calculated to determine if third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams were significant predictors of the TCAP TNReady third-grade ELA exam for female students. No significant regression equation was found [ $F(2, 92) = .039, p = .961$ ] with an  $R^2$  of .001. Therefore, the null hypothesis was retained. This finding suggests 0.1% of the variance in TNReady ELA composite results could be explained by the predictor variables. Results also suggest other variables could explain 99.9% of the variance in TNReady ELA results. Due to results that were not significant, determining the strongest predictor variable was not relevant. However, the following *Beta* scores were examined. STAR Reading Fall 2018 had a *Beta* score of .010,  $p = .949$ . STAR Reading Spring 2019 had a *Beta* score of .021,  $p = .892$ . The results are displayed in Table 12.

**Table 12.**

*Coefficients for STAR Reading Fall 2018 and Spring 2019 for Female Students*

Variable	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>Significance</i>
STAR Reading Fall 2018	.020	.010	.064	.949
STAR Reading Spring 2019	.045	.021	.137	.892

*Note.*  $p = <.05$ .

**Research Question 3.** Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for male students?

$H_0$ : The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for male students.

Multiple linear regression was calculated to determine if third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams were significant predictors of the TCAP TNReady

third-grade ELA exam for male students. Significant regression equation was found [ $F(2, 96) = 4.228, p = .017$ ] with an  $R^2$  of .081. Therefore, the null hypothesis was rejected. This finding suggests 8.1% of the variance in TNReady ELA composite results could be explained by the predictor variables. Results also suggest other variables could explain 91.9% of the variance in TNReady ELA results. Based on significance, *Beta* scores were examined to determine the strongest predictor. STAR Reading Fall 2018 had a *Beta* score of .007,  $p = .963$ . STAR Reading Spring 2019 had a *Beta* score of .290,  $p = .063$ . Therefore, TCAP TNReady ELA shows a significant relationship with the combination of STAR Reading scores with the Spring 2019 exam being the stronger predictor. The results are displayed in Table 13.

**Table 13.**

*Coefficients for STAR Reading Fall 2018 and Spring 2019 for Male Students*

Variable	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>Significance</i>
STAR Reading Fall 2018	.010	.007	.047	.963
STAR Reading Spring 2019	.413	.290	1.880	.063

*Note.*  $p = <.05$ .

**Research Question 4.** Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for economically-disadvantaged students?

$H_0$ : The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for economically-disadvantaged students.

Multiple linear regression was calculated to determine if third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams were significant predictors of the TCAP TNReady

third-grade ELA exam for economically-disadvantaged students. No significant regression equation was found [ $F(2, 103) = .072, p = .931$ ] with an  $R^2$  of .001. Therefore, the null hypothesis was retained. This finding suggests 0.1% of the variance in TNReady ELA composite results could be explained by the predictor variables. Results also suggest other variables could explain 99.9 % of the variance in TNReady ELA results. Due to results that were not significant, determining the strongest predictor variable was not relevant. However, the following *Beta* scores were examined. STAR Reading Fall 2018 had a *Beta* score of .042,  $p = .779$ . STAR Reading Spring 2019 had a *Beta* score of .056,  $p = .705$ . The results are displayed in Table 14.

**Table 14.**

*Coefficients for STAR Reading Fall 2018 and Spring 2019 for Economically Disadvantaged*

Variable	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>Significance</i>
STAR Reading Fall 2018	.061	.042	.281	.779
STAR Reading Spring 2019	.082	.056	.379	.705

Note.  $p = <.05$ .

**Research Question 5.** Are the third-grade STAR Reading Fall 2018 exam and the third-grade STAR Reading Spring 2019 exam significant predictors of the TCAP third-grade ELA exam for non-economically disadvantaged students?

$H_0$ : The third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams are not significant predictors of the TCAP TNReady third-grade ELA exam for non-economically disadvantaged students.

Multiple linear regression was calculated to determine if third-grade STAR Reading Fall 2018 and STAR Reading Spring 2019 exams were significant predictors of the TCAP TNReady third-grade ELA exam for non-economically disadvantaged students. No significant regression equation was found [ $F(2, 86) = 1.975, p = .145$ ] with an  $R^2$  of .044. Therefore, the null hypothesis was retained. This finding suggests 4.4% of the variance in TNReady ELA composite results could be explained by the predictor variables. Results also suggest other variables could explain 95.6 % of the variance in TNReady ELA results. Due to results that were not significant, determining the strongest predictor variable was not relevant. However, the following *Beta* scores were examined. STAR Reading Fall 2018 had a *Beta* score of .004,  $p = .982$ . STAR Reading Spring 2019 had a *Beta* score of .208,  $p = .214$ . The results are displayed in Table 15.

**Table 15.**

*Coefficients for STAR Reading Fall 2018 and Spring 2019 for Non-economically Disadvantaged*

Variable	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>Significance</i>
STAR Reading Fall 2018	.007	.004	.023	.982
STAR Reading Spring 2019	.411	.208	1.252	.214

Note.  $p = <.05$ .

**Research Question 6.** Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores.

A paired-samples *t*-test comparing the mean scores of STAR Reading Fall 2018 exam and STAR Reading Spring 2019 exam NCEs was conducted. A significant difference between the means of the two exams ( $t(193) = 9.146, p = .001$ ) was found. Therefore, the null hypothesis was rejected. The mean for the STAR Reading Fall 2018 exam was significantly lower ( $M = 47.039, SD = 17.219$ ) than the mean for the STAR Reading Spring 2019 exam ( $M = 54.615, SD = 16.353$ ) resulting in an increase from the Fall 2018 exam to the Spring 2019 exam. An effect size of .451 was realized. The results are displayed in Table 16.

**Table 16.**

*Paired-samples t-test for STAR Reading Fall 2018 and Spring 2019 NCEs*

Variable	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>ES</i>
STAR Reading Fall 2018	47.039	17.219	193	9.146	.001***	.451
STAR Reading Spring 2019	54.615	16.353				

Note. \*\*\* indicates significance at  $p = .001$ .

**Research Question 7.** Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for female students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalence scores for female students.

A paired-samples *t*-test comparing the mean scores of Star Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for females was conducted. A significant difference between the means of the two exams ( $t(94) = 6.087, p = <.05$ ) was found. Therefore, the null hypothesis was rejected. The mean for

the STAR Reading Fall 2018 exam was significantly lower ( $M = 50.188$ ,  $SD = 15.996$ ) than the mean for the STAR Reading Spring 2019 exam ( $M = 57.214$ ,  $SD = 15.025$ ) resulting in an increase from the Fall 2018 exam to the Spring 2019 assessment. An effect size of .453 was realized. The results are reported in Table 17.

**Table 17.**

*Paired-samples t-test for STAR Reading Fall 2018 and Spring 2019 NCEs for Females*

Variable	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>ES</i>
STAR Reading Fall 2018	50.188	15.996	94	6.087	.001***	.453
STAR Reading Spring 2019	57.214	.001				

Note. \*\*\* indicates significance at  $p = .001$ .

**Research Question 8.** Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for male students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for male students.

A paired-samples *t*-test comparing the mean scores of STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for male students was conducted. A significant difference between the means of the two exams ( $t(98) = 6.811$ ,  $p = <.05$ ) was found. The mean for the STAR Reading Fall 2018 exam was significantly lower ( $M = 44.016$ ,  $SD = 17.879$ ) than the mean for the STAR Reading Spring 2019 exam ( $M = 52.121$ ,  $SD = 17.243$ ) resulting in an increase from the Fall 2018 assessment to the Spring 2019 exam. An effect size of .462 was realized. The results are reported in Table 18.

**Table 18.***Paired-samples t-test for STAR Reading Fall 2018 and Spring 2019 NCEs for Males*

Variable	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>ES</i>
STAR Reading Fall 2018	44.016	17.879	98	6.811	.001***	.462
STAR Reading Spring 2019	52.121	17.243				

Note. \*\*\* indicates significance at  $p = .001$ .

**Research Question 9.** Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students.

A paired-samples *t*-test comparing the mean scores of STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for economically-disadvantaged students was conducted. A significant difference between the means of the two exams ( $t(105) = 6.907, p = <.05$ ) was found. Therefore, the null hypothesis was rejected. The mean for the STAR Reading Fall 2018 exam was significantly lower ( $M = 44.196, SD = 15.966$ ) than the mean for the STAR Reading Spring 2019 exam ( $M = 51.825, SD = 16.038$ ) resulting in an increase from the Fall 2018 exam to the Spring 2019 assessment. An effect size of .477 was realized. The results are reported in Table 19.

**Table 19.***Paired-samples t-test for STAR Reading Fall 2018 and Spring 2019 NCEs for ED*

**Table 19** (Continued).

Variable	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>ES</i>
STAR Reading Fall 2018	44.196	15.966	105	6.907	.001***	.477
STAR Reading Spring 2019	51.825	16.038				

Note. \*\*\* indicates significance at  $p = .001$ .

**Research Question 10.** Is there a significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students?

$H_0$ : There is no significant difference between students' STAR Reading Fall 2018 exam normal curve equivalent scores and their STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students.

A paired-samples *t*-test comparing the mean scores of STAR Reading Fall 2018 exam normal curve equivalent scores and STAR Reading Spring 2019 exam normal curve equivalent scores for non-economically disadvantaged students was conducted. A significant difference between the means of the two exams ( $t(87) = 5.973, p = <.05$ ) was found. Therefore, the null hypothesis was rejected. The mean for the STAR Reading Fall 2018 exam was significantly lower ( $M = 50.463, SD = 18.122$ ) than the mean for the STAR Reading Spring 2019 exam ( $M = 57.976, SD = 16.184$ ) resulting in an increase from the Fall 2018 assessment to the Spring 2019 exam. An effect size of .437 was realized. The results are reported in Table 20.

**Table 20.**

*Paired-samples t-test on STAR Reading Fall 2018 and Spring 2019 NCEs for Non-ED*

Variable	<i>M</i>	<i>SD</i>	<i>df</i>	<i>t</i>	<i>p</i>	<i>ES</i>
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**Table 20** (Continued).

STAR Reading Fall 2018	50.463	18.122	87	5.973	.001***	.437
STAR Reading Spring 2019	57.976	16.184				

Note. \*\*\* indicates significance at  $p = .001$ .

### Summary

Chapter 4 presented data analysis findings for the 10 research questions. Consistent with quantitative research methodology, numerical data analysis was conducted using IBM SPSS, and results reported for the sample,  $n = 194$ . Two separate summative assessment programs were used for this analysis: STAR Reading and TCAP TNReady ELA. STAR Reading was administered as a universal screener and predictive assessment of the high-stakes, end-of-year mandated reading assessment. Multiple linear regression and paired-samples  $t$ -test were used to determine if either STAR Reading Fall 2018 or Spring 2019 NCE scores could predict TCAP TNReady ELA assessment scores or determine student academic growth for third grade students including socioeconomic subgroups. Results indicated the predictive assessment, STAR Reading Spring 2019, was a predictor of TCAP TNReady ELA scores for males, but not females or either socioeconomic subgroup. Additionally, significant differences for all students, including socioeconomic subgroup was found between the STAR Reading Fall 2018 and Spring 2019 assessments resulting in an increase in mean scores from the aforementioned to the latter. All students demonstrated academic growth. Chapter 5 will further expound to further discuss the findings, conclude this study, and purpose recommendations based on the findings.

## CHAPTER 5

### Summary, Discussion, Conclusion, and Recommendations

#### Purpose of the Study

The purpose of this predictive correlational study was to determine predictability for the TCAP TNReady ELA high-stakes assessment and determine correlation with student growth of third-grade students who participated in a small-group differentiated reading program within nine Title I elementary schools in a Northeast Tennessee school district for school year (SY) 2018-2019. The study analyzed Star Reading Normal Curve Equivalent (NCE) scores from the universal screener, STAR Reading Fall 2018, and STAR Reading Spring 2019 assessment for predictive purposes for the TCAP TNReady ELA. Those scores were chosen based on Renaissance Learning, Incorporated's (2015) technical definition for usage of such scores.

#### Summary of the Findings

This study was based on the data, tests, analyses, and findings of 10 research questions that served as sample-inclusive measures and sample subgroup-inclusive measures. The sample also participated in differentiated reading instruction to improve early literacy skills and scores. Analysis of the quantitative data for this predictive correlational study determined yielded relevant findings.

Research Question 1 revealed that the combination of STAR Reading assessments, Fall 2018 and Spring 2019, were not predictors of third-grade TCAP TNReady ELA exam scores for all students. Because a predictive relationship does not exist among the three assessments overall, determining which STAR Reading assessment was the strongest predictor of the TCAP TNReady ELA assessment was not relevant. When the sample was grouped by gender, specifically female students in Research Question 2, the same results were found. However, in

Research Question 3, for males the results indicated a significant relationship between the combination STAR Reading assessments and the TCAP TNReady ELA exam. Still, no significant predictor between the two STAR Reading assessments Research Questions 4 and 5, economically disadvantaged and non-economically disadvantaged, demonstrated that no relationship exists between the combination of Star Reading assessments and the TCAP TNReady ELA assessment.

Research Questions 6 through 10 all yielded significant findings. The questions focused on determining whether or not a significant difference was found between the STAR Reading Fall 2018 and Spring 2019 assessments indicative of academic growth based. Research Question 6 focused on the whole sample, while the subsequent research questions sub-grouped according to gender, females, and males, and socio-economic status, economically disadvantaged, and non-economically-disadvantaged, respectively. All results indicated significant differences, which in turn indicated more academic growth that would typically be expected for females, males, economically disadvantaged, and non-economically disadvantaged students.

### **Discussion of the Findings**

Improving reading proficiency remains a focus among national, state, and local education agencies to meet the global demands on post-secondary endeavors such as careers, college completion, and military servitude (Fiester, 2010). Conley and the Educational Policy Improvement Center (2012) conveyed a definition correlation between career and college readiness being the rigorous foundational skills needed in post-secondary endeavors. Those foundational skills are embedded in early literacy achievement (Buehler, & Guignard, 2019). Also, special education reform impacted general education through a recommended tiered-model intervention program, third-grade reading proficiency focus, and research-based reading

curricula implementation (U. S. Department of Education, 2018). With a literacy achievement focus for all students, the TDOE (2015) implemented RtI<sup>2</sup> to meet such demands. Within the constructs of the Every Student Succeeds Act (ESSA), assessing students through a universal screener became a recurring practice at the beginning of every school year for tier placement of students and as a literacy starting point for both students and teachers. This district implements STAR Reading as that universal screener.

Both STAR Reading and the TCAP TNReady ELA assessments provide both criterion-referenced and norm-referenced scores for various purposes. The Tennessee State Standards for English Language Arts encompass "...print concepts, phonological awareness, phonics and word recognition, word and sentence composition, and fluency" (Tennessee Department of Education, 2017). According to Renaissance Learning, Incorporated (2017), "...school- and district-level administrators can use STAR Reading to predict performance on high-stakes tests" and "...can easily be disaggregated to identify and address the needs of various groups of students" (p. 2). Disaggregating groups, as in this study, is based on the extensive research into both gender and socio-economic early literacy attainment and overall academic progress in reading. This study revealed both relevant and expected results such as lower universal screener scores for all compared to their respective higher end-of-year STAR Reading Enterprise scores. Star Reading Enterprise is "...designed as a standards-based test; its items are organized into 5 content domains, 10 skill sets, 36 general skills, and over 470 discrete skills—all designed to align to national and state curriculum standards in reading and language arts..." (Renaissance Learning, Incorporated, 2015).

Consequently, those relationships were analyzed through this predictive correlational study among the available respective summative assessments due to their usage despite what

reading program the school district utilizes. Non-aggregation results revealed that, in combination, the STAR Reading assessments did not predict TCAP TNReady ELA results for females, economically disadvantaged, and non-economically disadvantaged students, which is contrary to Renaissance Learning, Incorporated's (2018) statement, "Results from the linking analysis revealed that Star Reading and Star Math are accurate predictors of the TNReady...to...Forecast the percent of students at each TNReady performance level... for building and district administrators and allow redirection of resources as needed." While this also applies to female students and both socio-economic groups, it does not apply to male students. According to the results, the combination of STAR Reading Fall 2018 and Spring 2019 could predict TCAP TNReady ELA scores for males. Despite this correlation, however, neither STAR Reading assessment was stronger at predicting the TCAP TNReady ELA scores. Based on the results for both gender and socioeconomic groups, it is practical to infer other variables could explain the lack of significance. Although the combination of STAR Reading assessments did not predict TCAP TNReady ELA results, STAR Reading normal curve equivalent (NCE) scores revealed that all students, non-aggregated, demonstrated academic growth. Disaggregated results indicated that females, males, economically disadvantaged, and non-economically disadvantaged students all had academic growth. While females scored higher on STAR Reading universal screener indicating a higher academic starting point for the third-grade year, males attained more academic growth. The same is indicated for the socioeconomic groups: Non-economically disadvantaged scored higher on the universal screener, yet economically-disadvantaged students attained more academic growth. Ng (2018) reported that economically-disadvantaged students in many developed countries perform consistently below that of non-economically disadvantaged students on standardized reading assessments. The results of this

study affirmed that. Keiffer (2011) theorized that since a literacy focus on decreasing achievement gaps has taken precedence, primary grades literacy instruction is narrowing the gap through third grade between socioeconomic groups. Contrary to Keiffer's (2011) findings, the results of this study were unparalleled. Consequently, this study proved that female students and non-economically disadvantaged had higher universal screener and end-of-year predictor scores than their respective counterparts although all did demonstrate gains in reading achievement. Gender and socioeconomics do factor into overall learning, testing, and literacy achievement.

Lastly, associated variables, such as the "profound" impact of schools on student achievement, cannot be excluded (Marzano, 2001). Marzano (2001) reported variables such as high academic expectations, aligned curricula, guardian engagement, educational goals, progress monitoring, and staff involvement all contribute to students' academic achievement. Respective to socioeconomic status on achievement, Destin, Hanselman, Buontempo, Tipton, and Yeager (2019) reported a significant yet small impact of mindset on academic performance among ninth graders, but determining third-graders' mindset must be rather difficult for no relevant research could be found nor studied among the samples. Despite the lack of research on young learners' mindset, what remains is Tennessee's focus on third-grade reading proficiency and how to remedy latter academic struggles through third-grade retention (Tennessee State Board of Education, 2019).

While this study did not confirm Renaissance Learning, Incorporated's (2017) claim to predict high-stakes test scores, other assessment programs make the predication correlation claim. Good, Simmons, and Kame' enui (as cited in Barger, 2003) indicated that the DIBELS Oral Reading Fluency (ORF) was a reliable predictor of high-stakes state assessments. Barger (2003) tested 38 third-grade students in one North Carolina school district to determine

predictability between the DIBELS ORF and the state's end-of-grade assessment. The results confirmed a high correlation of .73 between the two assessments. Based on this work, it is safe to assume other predictor assessments would also correlate to the TCAP TNReady ELA assessment especially after an academic year's worth of reading instruction has taken place as indicated by Marzano (2001).

### **Limitations of the Study**

Several limitations were discovered during this study. The first limitation is that no summative assessment accompanies the implemented small-group differentiated reading program that students participated in during this studied school year. Therefore, the STAR Reading Fall 2018 and Spring 2019 assessments were used as independent variables, while the TCAP TNReady ELA assessment primarily served as the dependent variable in order to test the seven research questions. While this seems counterproductive, the STAR Reading program is not used for either the main reading program or reading intervention and serves as a universal screener predictive assessment tool through skills-based assessments for the state-mandated TCAP TNReady ELA assessment.

A second limitation was the assessment variation between STAR Reading and TCAP TNReady ELA. STAR Reading, as stated by Renaissance Learning, Incorporated (2018, p. 8) is "...highly reliable, valid, and efficient standards-based measures of student performance in reading and math provide valuable information regarding the acquisition of skills along a continuum of learning expectations" that assesses skills "... organized into 5 content domains, 10 skill sets, 36 general skills, and over 470 discrete skills—all designed to align to national and state curriculum standards in reading and language arts...(Renaissance Learning, Incorporated, 2015, p. 4). The TCAP TNReady ELA exam for Grade 3 is based on 24 state standards within

five domains: Reading: Literature, Reading: Informational Text, Reading: Vocabulary, Written Expressions, and Conventions that "...assess the Tennessee Academic Standards through literary and informational texts requiring students to demonstrate the ability to read closely, analyze text, and answer text-dependent questions, provide a written response to a prompt, and demonstrate command of the English language" (Tennessee Department of Education, n.d.-c). STAR Reading is a skills-based assessment aligned with standards while the TCAP TNReady is standards-based.

A third limitation was that only Renaissance Learning Incorporated's STAR Reading was used as a universal screener and predictive assessment. No other assessments, such as DIBELS, easyCBM, or Fountas and Pinnell, were included that this district also uses for assessments.

A fourth limitation of this study was the test-retest reliability considering that students take each assessment once unless a vast scoring discrepancy is found between classroom performance and test results. However, the TCAP TNReady ELA assessment is only administered once per year; therefore, there is no retest opportunity for students.

The administration of assessments was the fifth limitation. Despite the state-mandates stating that certified personnel are to administer respective assessments, the researcher did not observe or verify that certified personnel were the only ones to administer said assessments.

Random sampling proved to be the sixth limitation. Considering that archived data with no linking identification was used, random sampling was administered on all three summative assessments to attain data: STAR Reading Fall 2018, STAR Reading Spring 2019, and TCAP TNReady ELA. Therefore, matching students with their respective assessment data could not be done.

## **Conclusions**

Conclusions from this study are that there is not a relationship between the combination of STAR Reading assessments and the TCAP TNReady ELA for female students, economically-disadvantaged students, and non-economically disadvantaged students. However, there is a relationship between the combined STAR Reading assessments and the TCAP TNReady ELA for male students. Despite the revealed relationship, however, neither STAR Reading Fall 2018 nor STAR Reading Spring 2019 exam was a stronger predictor of TCAP TNReady ELA scores for both analyzed groups, gender and socioeconomic classifications. However, all students demonstrated academic growth between the two STAR Reading assessments with at least eight months between administrations. From both a researcher and educator standpoint, this academic growth inference can be applied to other programs used for universally screening and predicting tools based on one academic year's impact on both learning and testing results. Marzano (2001) reported variables such as high academic expectations, aligned curricula, guardian engagement, academic goals, progress monitoring, and staff involvement all contribute to students' academic achievement; not solely a universal screener, small-group differentiated reading program, or an administered predictor assessment as used in this study.

While different assessment programs are developed based on different research-based influences, generalization between the findings of respective universal screener and state-assessment predictor assessment may yield a similar result.

## **Recommendations**

### **Recommendations for Practice**

The findings of this study do not support the use of a universal screener and TCAP TNReady ELA predictor assessment developed by Renaissance Learning, Incorporated (2018)

for all students. Based on the study conducted by Renaissance Learning, Incorporated (2018), and this study, a predictive correlation exists for males only; the model is not a good fit for females, economically disadvantaged or non-economically students. Although the Star Reading assessments, Fall 2018 and Spring 2019, could not explain any variances in scores of the TCAP TNReady ELA assessment or the lack of a significant relationship between the two assessment types, there exist results that are indicative of student academic growth in reading. A recommendation for practice is incorporating other on-hand assessment programs be utilized to determine which is more closely aligned with the TCAP TNReady ELA, which would in turn influence future associated expenditures and also predictability of the TCAP TNReady ELA.

Based on the findings, a recommendation is to not combine STAR Reading assessments as a predictive means for the TCAP TNReady ELA assessment for females, economically disadvantaged, or non-economically disadvantaged students. A predictive correlational study is suggested between STAR Reading end-of-year exam and the TCAP TNReady ELA exam. If other end-of-year assessments are administered prior to the TCAP TNReady ELA assessment, those scores could be included in the aforementioned predictive correlational study.

Because of the findings that indicated both females and non-economically disadvantaged students began the school year at higher reporting levels than males or economically-disadvantaged students, several recommendations for practice can be made. First, males and economically-disadvantaged students could establish a personal score goal for the STAR Reading predictor assessment before taking the respective assessment. Ng (2018) advocated for student's voice in pedagogical decisions regarding reading choice to improve reading engagement especially for economically-disadvantaged students.

An additional recommendation is for schools to return to individual learning plans for all students that includes students in pre-conferencing for goal setting and post-conferencing for results discussion. Hattie (1999) established student-teacher communication as influencing student learning. Individual pre- and post-conferencing to impact student achievement could be analyzed for that effectiveness within the district. This study did not confirm pre- and post-conference engagements between teacher and students.

Based also on the mean differences between the two focused groups, gender and socioeconomic-grouped students, this school district should focus on language acquisition approaches for males and non-economically disadvantaged students in pre-kindergarten and sustain focus and assessing throughout their third-grade year to help narrow the reading achievement gaps. Liberman, Shankweiler, Fischer, and Carter (as cited in Muter, Hulme, Snowling, and Stevenson, 2004, p. 665) along with Savin (as cited in Muter, Hulme, Snowling, and Stevenson, 2004, p. 665) cited the phonemic awareness in speech impacted later word recognition in print. Also, Rubiner (2016) stated that economically-disadvantaged parents verbally interact with their children less than non-economically disadvantaged counterparts. School districts should increase language acquisition approaches to compensate those variances when students begin school.

### **Recommendations for Further Study**

A predictive-correlational study was used for this research. A predictive-correlational approach to research provides the opportunity for researchers to design a single study that indicates whether the relationship is statistically significant and the strength of the relationship (Muijs, 2011). Using a quantitative approach to this predictive-correlational study provides a more comprehensive understanding of both TCAP TNReady ELA scores among third grade

students and the STAR Reading assessments regarding the implemented small-group differentiated reading program mandated in 2016. This design is based on a realist ideology that truth in research exists and will be revealed through objective, quantitative methodology (Muijs, 2011). While this predictive-correlational quantitative approach was appropriate for this study and sample, a future qualitative study to include educator surveys relative to administered reading program would benefit school districts concerning literacy program future continuances and purchases especially for financially-restricted school districts with established declining student enrollment.

Although this predictive-correlational study used this sample's data, a prescriptive study may also compare sample data before the small-group differentiated reading program was implemented with this study's data to determine program effectiveness and prescribe future program applications. While no assessment similarity to either STAR Reading or TCAP TNReady ELA assessments accompanies this small-group differentiated reading program adopted by this school district, a comparative analysis for effectiveness needs to be created by the district to analyze program effectiveness. Effectiveness results would in turn help make financial decisions easier for vested stakeholders considering budgetary decreases faced by this district and others.

While universal screening and progress monitoring are directly linked to the state-mandated RtI<sup>2</sup> initiative, the school district should conduct cost-benefit analyses of assessment programs in use among the schools in this district for impact on student achievement and predictive correlational relationship. Expecting scoring differences among a universal screener, predictor assessment, and any state-mandated assessment is justified. However, true effectiveness and correlation needs to be uniform district wide. For example, the studied school

district uses the following programs as universal screeners: STAR Early Literacy, STAR Reading, easyCBM, and Fountas and Pinnell. It is unknown the criteria for assigning one screener program over another.

For intervention purposes, the Beverly Tyner and Sharon Green reading program, High Hat, Read Naturally, Read180, Sound Sensible, SPIRE, and System 44 are used. The aforementioned are also used for progress monitoring and special education referral data. With the RtI<sup>2</sup> program specifications, it is understandable to utilize several intervention programs. However, program effectiveness should be analyzed based on this school system's population demographics. Based on this predictive-correlational study, designing other studies with in-use assessment programs and reading intervention programs would further validate and benefit the school district for both immediate and future incorporation and financial sustainability. With decreasing student enrollment and the county's plateaued tax base, determining effective expenditures is imperative.

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## APPENDICES

## APPENDIX A

## School District Study Permission Letter

Milligan College  
 Department of Education  
 School of Social Sciences and Education

February 12, 2020

Wendy S. Lyons  
 109 Lane Hill Rd.  
 Elizabethton, TN 37643

Administrator Redacted

As part of the graduation requirements for Milligan College's Doctor of Education program, dissertation completion is mandated. I have finalized my topic, based on your recommendation, as a predictive correlation study between the Beverly Tyner Small-group Differentiated Reading program and third grade ELA scores on the state's TNReady Assessment (formerly TCAPs).

Therefore, I need your permission to conduct the research and enlist supervisory and educational coach assistance [System Administrators Redacted] in locating and using archived data from a random sample within the third grade ELA school district population from school years 2016-2017, 2017-2018, and/or 2018-2019. The desired sample population will be approximately 150-200 or half of the total third grade district population for those years.

Additionally, Carter County Schools will not be named specifically, but will be noted as, 'a rural school district in Northeast Tennessee'. The Beverly Tyner Small-group Differentiated Reading program will be referred to as, 'a small-group differentiated reading program'.

By signing below, you are granting permission for such research using archived data to begin on February 12, 2020 until the dissertation is completed. Anticipated graduation is May 9, 2020.

Thank you for your suggestion and consideration for this dissertation project.

Respectfully,

Wendy S. Lyons, M. Ed.

PERMISSION GRANTED FOR THE USE REQUESTED ABOVE:

Signature Redacted

Date: 2-12-2020

School System  
 Information  
 Redacted

APENDIX B

Milligan College Institutional Review Board Approval Letter



Date: February 24, 2020

From: The Institutional Review Board (IRB) at Milligan College

Re: *The Relationship between 3rd Grade TNReady ELA Scores and Star Reading Scores from Small Group Differentiated Reading Program Implementation at Selected Elementary Schools in an Upper East Tennessee School District*

Submission type: Initial Submission

Dear Wendy,

On behalf of the Milligan College Institutional Review Board (IRB), we are writing to inform you that your study *The Relationship between 3rd Grade TNReady ELA Scores and Star Reading Scores from Small Group Differentiated Reading Program Implementation at Selected Elementary Schools in an Upper East Tennessee School District* has been approved as expedited. This approval also indicates that you have fulfilled the IRB requirements for Milligan College.

All research must be conducted in accordance with this approved submission, meaning that you will follow the research plan you have outlined here, use approved materials, and follow college policies.

Take special note of the following important aspects of your approval:

- Any changes made to your study require approval from the IRB Committee before they can be implemented as part of your study. Contact the IRB Committee at [IRB@milligan.edu](mailto:IRB@milligan.edu) with your questions and/or proposed modifications.
- If there are any unanticipated problems or complaints from participants during your data collection, you must notify the Milligan College IRB Office within 24 hours of the data collection problem or complaint.

The Milligan College IRB Committee is pleased to congratulate you on the approval of your research proposal. Best wishes as you conduct your research! If you have any questions about your IRB Approval, please contact the IRB Office and copy your faculty advisor if appropriate on the communication.

Regards,

Signature Redacted

The IRB Committee