

EFFECTS OF REPEATED READING PLUS SYSTEMATIC ERROR CORRECTION
ON ORAL READING FLUENCY AND COMPREHENSION FOR STUDENTS WITH
DISABILITIES

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DEDICATION

To my husband, Paul Flint, who has encouraged me throughout my entire adult educational journey. Pushing me to go back to school after having two babies to get an A.A.A., then fast forward 27 years to today, supporting me while I pursued a Ph.D. as a full-time student. Thank you for your endless belief in my abilities, sacrifices, and love.

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ABSTRACT

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EFFECTS OF REPEATED READING PLUS SYSTEMATIC ERROR CORRECTION ON ORAL READING FLUENCY AND COMPREHENSION FOR STUDENTS WITH DISABILITIES MAY 2021

Limited research exists on the use of repeated reading (RR) plus systematic error correction (SEC) for students with a specific learning disability (SLD) in reading. This study used a multiple baseline across participants design to determine if there is a functional relationship between the use of RR plus SEC and an increase in words correct per minute (WCPM), accuracy, and comprehension for four elementary students with a SLD in reading. The intervention consisted of an initial 5 min reading of the passage with SEC with each participant. Additionally, each participant read the passage two more times with limited error correction (when the student made an error the researcher said the word correctly and the student repeated the word but did not reread the entire sentence Nelson et al., 2004). The researcher implemented the following procedure for SEC with each participant for initial and subsequent passage readings: (a) the student read the passage aloud; (b) each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence; (c) after reading the passage the researcher reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word one at a time; (d) when the student made an error during review, the researcher said the word and asked the student to repeat it; and (e) the researcher asked the student to reread the entire

passage after SEC and I timed the student for 1 min and recorded the WCPM and errors per minute (EPM). Results indicated the potential of this practice to improve the reading fluency, accuracy, and comprehension for elementary students with a SLD. Also discussed are the implications of these findings (i.e., finding simple interventions is critical given demands on educators) and future directions for similar research (i.e., use of various participant groups) with various populations.

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CHAPTER I

INTRODUCTION

The No Child Left Behind Act (NCLB) of 2001 and its successor, Every Student Succeeds Act (ESSA) of 2015, set a goal that every child, regardless of race, income, zip code, disability, home language, or background, be able to read at or above grade level by the time they leave third grade. NCLB and ESSA further stress the importance of schools implementing reading instruction that uses scientifically based strategies. Schools expect teachers to deliver the appropriate reading instructional strategies; therefore, it is of utmost importance that teachers see the strategies as workable.

A specific characteristic of struggling readers is the inability to read text fluently (Strong et al., 2004). Improving fluency, commonly known as the ability to read with speed and accuracy, allows the reader to concentrate more on comprehension of text (O'Connor et al., 2007). Fluency is one of several elements necessary for skilled reading (National Reading Panel, 2000). According to Pressley et al. (2006), reading is a crucial skill for overall academic success (as cited in Landa & Barbetta, 2017). Several effective interventions for teaching reading skills have been studied by researchers, such as repeated reading (Daly et al., 2002; Mercer et al., 2000; Vaughn et al., 2000) and repeated reading plus error correction (Landa & Barbetta, 2017; Lo et al., 2011; Nelson et al., 2004; O'Connor et al., 2007).

Specific Learning Disabilities

Even though there are a critical number of students who are hindered in their learning to read, write, and spell or do mathematics, not all these students are determined to have a specific learning disability. Fifty years ago, the United States federal government first recognized specific learning disabilities (SLD) as a possibly disabling condition that delays students' academic and emotional adaptation in school and society. The category of SLD is the largest in the United States among people who receive federal support through special education; approximately 33% (or 2,343,000) of students in Pre-K-12 public school settings. Due to the significant number of students affected by SLD, it is critical that educators are provided teaching strategies that can positively influence student academic progress in reading.

SLD has been difficult to define, and controversy has always surrounded the interpretation of the definition in terms of how it is operationalized. Historically, the definition has strived to represent individuals that struggle to read, write, and/or perform mathematics even with the lack of circumstances that hinder the learning of these skills (Kirk, 1963, as cited in Fletcher et al., 2014). Not all students that have difficulty achieving in reading, writing and mathematics are included in the classification of SLD. For instance, exclusionary criteria for SLD (those that are not the chief contributors to the student's unexpected academic struggle) include: intellectual disabilities, sensory disorders, emotional disturbance, and economic or cultural differences. The previous century yielded studies that included seemingly bright children with acute reading difficulties but learned math skills, which heavily influenced the concept of SLD.

Inclusion criteria were indicative of people who struggled to learn to read even with the absence of conditions that impede acquiring these skills (Kirk & Bateman, 1962). These students struggled to learn basic reading skills while demonstrating no difficulty in acquiring math skills. The long-standing struggle to define SLD and the debate over how best to interpret the definition has led to obstacles in its operationalization.

For a student to be identified as having a SLD, there are a few particular characteristics that are either existing or lacking. SLD depicts a category of students that have unexpected low achievement in reading, writing, or math. This is separate from expected under-achievement due to specific inclusionary and exclusionary factors (e.g., second language acquisition, socioeconomic status, and lack of educational opportunity (Kavale & Forness, 2000) that characterize other indicators that could clarify the under-achievement. The definition of SLD holds elements of the inclusionary and exclusionary components (e.g., deficit in basic psychological process of learning or understanding language) and as a result, a student that is identified to receive special education services for SLD would have unanticipated low achievement in reading, writing, or math regardless of educational opportunities.

The 2013 American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) defines a learning disability or "learning disorder" as:

Specific learning disorder (often referred to as a learning disorder or learning disability) is a neurodevelopmental disorder that begins during school age, although may not be recognized until adulthood. Learning disabilities refers to

ongoing problems in one of three areas, reading, writing and math, which are foundational to one's ability to learn (Sec. 3.15).

The DSM-5 continues to state that various other abilities could be affected such as, spelling, reading comprehension, math calculations and problem solving, and the capacity to express thoughts in writing. Deficits in these skills could cause struggles with learning content areas, such as science, social studies, or math as well as impacting daily activities.

The Individuals with Disabilities Act (IDEA) (2004) definition of SLD is the leading definition of SLD. The definition is:

In General-The term "specific learning disability" means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken, or written, which may manifest itself in an imperfect ability to listen, think, speak, write, spell, or do mathematical calculations.

Disorders Included- Such terms include such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

Disorders Not Included- Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (P.L. 108-466, Sec. 602[30]).

The definition of SLD under IDEA produces an idea with three significant points. First, deficits in basic psychological processes are connected to academic struggles in

tandem with cognitive deficits. Second, there exists a list of conditions linked to SLD such as dyscalculia or dyslexia. Finally, there is a statement of exclusionary factors that may cause learning problems but are not thought to be critical to a SLD determination. School districts use this definition to report enrollment numbers and trends for special education services for students with a SLD to the federal and state governments. Therefore, it is vital that school districts correctly identify students to determine appropriate services and instructional practices to meet the needs of their students with a SLD.

To test the effects of repeated reading plus systematic error correction on individuals with a specific learning disability in grades 4 - 5 I recruited this population. This study built on the suggestions for future research from the Landa and Barbetta, 2017 study. Landa & Barbetta (2017) suggested that future research should consider the use of systematic error correction (Nelson et al., 2004) in conjunction with repeated reading with individuals of various ability and age levels. Since students are not typically labeled with a specific learning disability prior to third grade, students with a specific learning disability in grades 4 - 5, aged 9 - 10 years old, were included in this study. Students in grades 3 - 5 have typically made the switch from learning to read to reading to learn, so students with a specific learning disability may still need specialized reading instruction to complete the learning to read process so they can then efficiently read to learn.

Interventions

Repeated Reading (RR) is a strategy correlated with improved reading fluency in elementary students with and without disabilities (Chafouleas et al., 2004; Kim et al.,

2017; Landa & Barbetta, 2017; Lee & Yoon Yoon, 2017; O'Connor et al., 2007; Nelson et al., 2004; National Reading Panel, 2000; Therrien, 2004). The intended use of RR is that of an ancillary developmental reading program that is designed to improve oral reading fluency. The strategy is especially significant for students with SLD; however, it is also useful for typically developing students as well (Samuels, 1979).

Systematic error correction (SEC), a form of error correction, is a strategy used to improve accuracy and decoding when reading (Barbetta, Heward, & Bradley, 1993; Barbetta, Heron, & Heward, 1993; Nelson et al., 2004). Teacher feedback informs the student about correct and incorrect responses and allows for suggestions on correcting errors (Therrien & Kubina, 2006). RR plus SEC has been associated with fewer errors when reading and increased reading rates for students with disabilities (Barbetta, Heward, & Bradley, 1993; Barbetta, Heron, & Heward, 1993; Nelson et al., 2004).

Multiple Baseline Across Participants

A single- subject, multiple baseline across participants design was applied during this investigation. Single case research designs are suitable for educational settings (e.g., multiple baseline across participants) because of the flexibility (i.e., the learner controls the pace), methodical controls for internal validity threats, and reasonableness for educators' research endeavors to align with their instructional practices (Gast & Ledford, 2014).

Progress monitoring passages were used during the baseline condition and consisted of an initial reading of the passage with SEC as well as fluency and comprehension assessments. The intervention phase for each student began when an

acceptable level of stability and zero acceleration trend was observed. After baseline data was stable, the intervention phase began and consisted of the same procedures as baseline, RR with SEC, with the following exception: after the initial reading of the passage with SEC, the student read the passage two more times and each session ended with fluency and comprehension assessments, except those that had generalization probes. Similar but untaught fluency and comprehension probes were administered after every third intervention session to test the generalization of the RR's effects. Intervention probes were used in the maintenance phase, which was at two and three weeks after the last intervention session.

Statement of the Problem

Reading is potentially the most important skill students learn in school. Nevertheless, many students have substantial difficulty learning basic reading skills. Struggles with reading are more pronounced for students with special needs, who might continue with these difficulties all through their schooling and well into adulthood (Lyon & Moats, 1997). Generally, students are not labeled with a SLD before the third grade, students with a specific learning disability in grades 4 - 5, aged 9 - 10 years old, were included in this study. The change from learning to read to reading to learn typically has taken place for students in grades 3 – 5; however students with a SLD may need specialized reading instruction to master learning to read.

Research Questions

Given the gap in research involving participants in third, fourth, and fifth grade who have a learning disability, the current study built upon the Landa and Barbetta

(2017) study by evaluating the effects of SEC (Nelson et al., 2004) used in conjunction with RR of familiar and unfamiliar text. The following research questions were investigated:

1. Does repeated reading plus systematic error correction result in a change in oral reading fluency (as measured by words read aloud correctly per minute), the number of errors read aloud per minute, and the number of comprehension questions answered correctly by the student with familiar text?
2. Does repeated readings plus systematic error correction result in the generalization of oral reading fluency (as measured by words read aloud correctly per minute), the number of errors read aloud per minute, and the number of comprehension questions answered correctly by the student with unfamiliar text?

CHAPTER II

LITERATURE REVIEW

Reading is arguably the most important skill students learn in school. However, many students have tremendous difficulty learning basic reading skills. Difficulties with reading are more prominent for students with special needs, who might continue with these struggles throughout their schooling and well into adulthood (Lyon & Moats, 1997).

A defining characteristic of struggling readers is the inability to read text fluently (Strong et al., 2004). Improving fluency, defined as the ability to read with speed and accuracy, allows the reader to focus more on comprehension of text (O'Connor et al., 2007). Fluency is one of several critical factors necessary for skilled reading (National Reading Panel, 2000). Furthermore, Pressley et al. (2006) found that reading is a critical skill for overall academic success (as cited in Landa & Barbetta, 2017) because struggling readers devote a significant amount of energy to decoding and have diminished comprehension and many times do not have adequate time to finish assignments (Hitchcock et al., 2004). Researchers have investigated various effective interventions for teaching reading skills, such as RR (Daly et al., 20002; Mercer et al., 2000; Vaughn et al., 2000) and repeated reading plus error correction (Landa & Barbetta, 2017; Lo, et al., 2011; Nelson et al., 2004; O'Connor et al., 2007). Researchers suggest that by combining repeated reading and systematic error correction a student could expect to experience an increase in fluency, and thereby improved comprehension skills.

Students with a Specific Learning Disability

While there are a significant number of students who are delayed in their learning to read, write, and spell or do mathematics, not all these students are considered to have a SLD. Fifty years ago, the United States federal government first recognized SLD as a possibly disabling condition that hinders students' adjustment at school and in society. The category of SLD is the largest in the United States for people who receive federal support through special education accounting for approximately 33% or 2,343,000 of students in Pre-K-12 public school settings. Due to the significant number of students impacted by SLD, it is critical that educators are equipped with teaching strategies that can positively impact student academic success in reading.

SLD has been challenging to define, and controversy has always enveloped the formalization in terms of how it is operationalized. Historically, the definition has always attempted to represent individuals that struggle to read, write, and/or perform mathematics even with the absence of circumstances that impede the acquisition of these skills (Kirk, 1963, as cited in Fletcher et al., 2014). However, not all students that struggle to perform in reading, writing and mathematics are included under the classification of SLD. For example, exclusionary criteria for SLD (those that are not the primary contributors to the student's unexpected academic struggle) include: intellectual disabilities, sensory disorders, emotional disturbance, and economic or cultural differences. Studies from the previous century involving seemingly smart children who had severe reading difficulties but could learn math skills, have largely influenced the concept of SLD. Inclusion criteria were representative of individuals who struggled to

learn to read despite the lack of conditions that hinder acquiring these skills (Kirk & Bateman, 1962). Despite instruction in reading and showing no signs of difficulty in learning math skills, these students struggled to learn basic reading skills.

For a student to be identified as having a SLD, there are certain various characteristics that are either present or absent. SLD signifies a group of students that have unanticipated low achievement in reading, writing or math. This differs from expected under-achievement because of specific inclusionary and exclusionary factors (e.g., second language acquisition, socioeconomic status, and lack of educational opportunity (Kavale & Forness, 2000) that represent other indicators that could explain the under-achievement. The definition of SLD encompasses components of the inclusionary and exclusionary factors (e.g., deficit in basic psychological process of learning or understanding language) and as a result, a student that is found to receive special education services for a SLD would have unexpected low achievement in reading, writing, or math regardless of educational opportunities.

According to the DSM-5 (2013) a learning disability or “learning disorder” is defined as:

Specific learning disorder (often referred to as learning disorder or learning disability) is a neurodevelopmental disorder that begins during school age, although may not be recognized until adulthood. Learning disabilities refers to ongoing problems in one of three areas, reading, writing and math, which are foundational to one’s ability to learn (Sec. 3.15).

The DSM-5 further states that various other skills could be impacted such as, spelling, reading comprehension, math calculations and problem solving, and the ability to express thoughts in writing. Deficits in these skills could cause challenges in learning content areas, such as science, social studies, or math concepts and could impact daily activities.

IDEA (2004) definition of SLD is the most prominent definition of SLD. The definition is:

In General-The term “specific learning disability” means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken, or written, which disorder may manifest itself in an imperfect ability to listen, think, speak, write, spell, or do mathematical calculations.

Disorders Included- Such terms include such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

Disorders Not Included- Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (P.L. 108-466, Sec. 602[30]).

The definition of SLD under IDEA demonstrates a concept with three key points, (a) academic difficulties in tandem with cognitive deficits, which are also related to deficits in basic psychological processes; (b) a list of conditions associated with SLD such as dyscalculia or dyslexia; and (c) a statement of exclusionary elements that may cause learning problems but are not thought to be key to the SLD determination. When school districts use this definition, they report enrollment numbers and trends for special

education services for students with a SLD to the federal and state governments. So, it is vital that school districts correctly identify students to determine proper services and instructional strategies to satisfy the needs of their students with a SLD.

The National Center for Educational Statistics (NCES; 2020) reported that during the 2018 - 19 school year, the number of students aged 3-21 who received special education services under the IDEA was 7.1 million, or 14% of all public- school students. A greater percentage of students 3 - 21 received special education services under IDEA for SLDs than for any other disability category (i.e., 33% or 2,343,000). According to Kavale et al. (2009, p. 40), a SLD is “a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, write, spell, or do mathematical calculations.” In 2018 - 19, 33%, or 2,343,000, of all students who received special education services had a SLD, 19%, or 1,349,000, had speech or language impairments, and 15%, or 1,065,000, had other health impairments. Students with autism, developmental delays, intellectual disabilities, and emotional disturbances each represented between 5% and 11%, or 355,000 to 781,000, of students served under IDEA. Students with multiple disabilities, hearing impairments, orthopedic impairments, visual impairments, traumatic brain injuries, and deaf blindness each represented 2% or less, or 71,000 to 142,000, of those served under IDEA. As noted in the statistics, SLD has a far-reaching impact on students receiving special education services and should be a focus for research concerning use of best instructional practices. See Table 1 for 2018 - 19 NCES Data on Special Education Services Under IDEA

Table 1*2018-19 NCES Data on Special Education Services Under IDEA*

Category	Percentage	Number
SLD	33	2,343,000
Speech & Language Impairments	19	1,349,000
Other Health Impairment	15	1,065,000
Autism, Developmental Delays, Intellectual Disabilities, & Emotional Disturbance	5 - 11	355,000 - 781,000
Multiple Disabilities, Hearing Impairments, Orthopedic Impairments, Visual Impairments, Traumatic Brain Injuries, & Deaf Blindness	2 or lower	71,000 - 142,000

The Texas Education Agency (TEA, 2019) data on enrollment trends indicate that Texas had 531,991 students with disabilities, 8.7%, or 46,283, of whom had a specific learning disability, enrolled in public and charter schools in grades K-12 during the 2018 - 19 school year. Perhaps the difference between the state average, 8.7%, and the national average, 33%, for students with SLD served in special education is the fact that in Texas, students with dyslexia are often served in general education programs under 504 unless the Admission Review and Dismissal (ARD) committee determines the student who has dyslexia is eligible under IDEA as a student with a specific learning disability. A student

with dyslexia has a disability under IDEA if the student meets the criteria for a specific learning disability and, due to dyslexia or a related disorder, needs special education (TEA, 2018).

According to the 2018 TEA Dyslexia Handbook, standard protocol dyslexia instruction is not specially designed instruction unless the ARD committee determines the student meets eligibility under IDEA for special education. Rather, it is programmatic instruction delivered to a group of students. This report further stated that students served in special education had increased over the same 10-year span from 9.2 % to 9.8%. According to the TEA Public Education Information Management System (PEIMS) data report (2020) 183,452 students were categorized as having a specific learning disability. This number showed a significant increase from the TEA 2019 data on enrollment trends thus making the need to identify and use best instructional practices for students with an SLD even more critical.

Specific Learning Disabilities and Reading

Due to the upward trend line in Texas for identification of students with an SLD it is vital to identify students with reading problems early and to implement appropriate early interventions (Lerner & Johns, 2009) because literacy learning during the primary grades is even more suggestive of later literacy achievement. Nationally, 75%–80% of special education students identified with an SLD have their basic deficits in language and reading (Learning Disabilities Association of America, 2020). More than 17.5% of school-aged children in the United States, approximately 1 million, face difficulties with reading within the first 3 years of school (National Reading Panel, 2000). Seventy-four

percent of children who struggle in reading in third grade continue to struggle into high school (National Institute for Child Health and Human Development, 1999). In addition, continued struggles with reading can impact everyday activities.

It is estimated that 90% of students with SLD were referred to special education for reading struggles (Kavale & Forness, 2000). These students would typically be identified as having a deficit in three fundamental cognitive processes, phonological processing (i.e. association of sounds with letters), syntactic awareness (i.e., ability to understand the rules of language, and working memory (i.e., ability to store information in short term memory while processing incoming information and retrieving information from long-term memory), constitutes the basic characteristics of a reading disability (Siegel & Mazabel, 2014). A student that is not identified early in his/her academic career can experience difficulties later in life. For example, longitudinal research shows worse vocational outcomes, lower graduation rates, and higher incidences of psychiatric struggles, such as suicide, for individuals with reading difficulties (Daniel et al, 2006). Due to the large and long reaching impact that difficulties in reading can have on a student, it is critical for research to identify evidence based instructional practices that can be generalized to more student populations.

Evidence-Based Strategies for Reading Instruction

Due to the significant impact that SLD has had on students in a Pre-Kindergarten through high school setting much research has been done to identify best practices for reading instruction. For example, the National Reading Panel report (2000) recognized five critical components of effective reading instruction: (1) phonemic awareness, (2)

phonics, (3) fluency, (4) vocabulary, and (5) comprehension. Improving fluency, commonly known as the ability to read with automaticity, allows the reader to concentrate more on comprehension of text (O'Connor et al., 2007). Improving fluency is a critical step in helping a student improve reading comprehension. Challenges with reading are more pronounced for students with SLD, who could carry these struggles while in school and well into their adult years (Lyon & Moats, 1997). Using an intervention that addresses improving a student's ability to read fluently could improve the student's reading comprehension ability, which in turn could increase the student's overall academic success.

Fluency instruction is made to increase automatic word recognition and prosody, or expression, correct phrasing, and attention to punctuation. According to the theory of automaticity (Samuels, 1979), fluent readers automatically process information when reading at the phonological and visual levels, so they can focus more of their attention on deriving meaning from the text. Struggling readers take longer and need more repetition to automatically recognize and recall words and this hinders comprehension. It is critical that fluency instruction allows students to have numerous opportunities for practice using evidence-based strategies, such as: (a) choral repeated reading, which combines ideas and procedures from repeated reading and choral reading; (b) peer-supported reading, which matches stronger readers with struggling readers to practice rereading text and answering questions about text meaning; and (c) reading performance which allows students to perform a play or book, by reading it aloud for an audience, that has been modified into a script. Repeated practice with these evidence-based strategies, could allow the reader to

shift cognitive focus from word recognition and other reading processes to comprehension. This could lead to increases in reading comprehension for the student.

Fluency provides the connection between decoding words and comprehension (Carnine et al., 2004, as cited in Therrien & Kubina, 2006). Therefore, if a student can read fluently then there is a high probability that the student will also be able to comprehend what they are reading. Fluency is usually measured by the number of words read correctly per minute (WCPM) and through observing phrasing, pace, and expression of the student. Calculating the WCPM for a selected passage is not difficult but is crucial for measuring the progress of the student. Educators can calculate WCPM by choosing two or three untaught passages that are on the student's instructional level. To select a passage that is the instructional level of the student the word recognition should be about 90%, while 100%-word recognition is considered the student's independent reading level (Vaughn & Bos, 2015, p. 223). The teacher chooses several untaught passages for the student to read aloud while the educator records WCPM, errors per minute (EPM) and notes student use of phrasing, pace, and expression. The WCPM and EPM for each passage are averaged to determine the student's overall fluency score. The teacher takes the number of WCPM for the two to three passages used and adds them together and then divides by the number of passages used to get the average of WCPM. Then the teacher repeats this process to get the average for the EPM. The overall goal of recording and attempting to improve reading rate and accuracy is that these two skills allow the student to focus on comprehension of text (O'Connor et al., 2007).

Understanding what you have read, whether it is for pleasure or to learn something new, is the primary reason individuals read. Therefore, comprehension is the definitive objective and overall goal of reading. Reading comprehension is the process of making meaning by using the information in the text and the reader's background knowledge (Lerner & Johns, 2009, p. 398). It includes complex cognitive skills and strategies that the reader employs while reading the text. The use of evidence-based teaching strategies can help support the practice of comprehension, such as: (a) brainstorming that uses the students' pertinent prior knowledge; (b) text preview, which is used to increase students' prior knowledge, inspire students to read, and give a scaffold for text understanding; (c) K-W-L, which activates students' background knowledge and sets a purpose for reading expository texts; (d) story-mapping, which gives students a guideline for retelling the important parts of narrative texts; and (e) reciprocal teaching, which allows the teacher and students to take turns leading the discussion about the text. Each of these evidence-based teaching strategies can serve to improve the overall comprehension of a text for a student that may be a struggling reader. However, there are other, more intensive, evidence-based strategies that are recommended for students that have a SLD.

Repeated Reading

RR is not a strategy for teaching all beginning reading skills. The rereading process emerged mainly from the teaching associations of the theory of automatic information processing in reading (LaBerge & Samuels, 1974 as cited in Samuels, 1979). Automaticity theory states that a fluent reader decodes text automatically leaving

attention to be focused on comprehension (Samuels, 1979). Educators can do two things to aid students in automaticity of word recognition: (a) they can deliver lessons on how to identify words at the accuracy level, and (b) they can give the time and inspiration so their students can practice the word recognition skills so they can become automatic. RR allows the student the necessary practice to become an automatic word reader.

RR is a strategy associated with increased reading fluency in elementary students with and without disabilities (Chafouleas et al., 2004; Kim et al., 2017; Landa & Barbetta, 2017; Lee & Yoon Yoon, 2017; O'Connor et al., 2007; National Reading Panel, 2000; Nelson et al., 2004; Therrien, 2004). The intended use of RR is that of a supplemental developmental reading program that aims to improve oral reading fluency. The strategy is especially appropriate for students with SLD; however, it is also helpful for typically developing students as well (Samuels, 1979). Samuels' seminal research on this method occurred at the University of Minnesota in the mid to late 1970s, at the same time Carol Chomsky (1978) from Harvard University was conducting similar research with struggling readers. Chomsky's (1978) research demonstrated comparable results to Samuels (1979) work. Chomsky found repeated readings allowed struggling readers to increase fluency, require fewer listenings to reach fluency, and gave the students increased confidence and motivation to read (Chomsky, 1978 as cited in Samuels, 1979). These early findings would impact future research by providing a foundation for the use of repeated reading with struggling readers as an evidence-based practice.

According to Samuels (1979) and Therrien and Kubina (2006), RR is an ancillary reading program that entails rereading a short text until an appropriate level of fluency

and accuracy is achieved. Then, the procedure is repeated with a new text. In one of Samuels' early studies, students who were struggling to read could pick easy stories that they found interesting. Then smaller parts of these stories, 50 - 200 words, were used for practice. The student would read the shorter practice piece to an assistant while words correct and EPM were recorded. The student then went back to their desk to practice reading the same selection independently. Next, the student would return to the assistant to read the selection again while words correct and EPM were again recorded. The student would repeat this process until the student reached 85 WCPM. Once the student reached 85 words per minute correct, he/she would select a new reading and the process was then repeated with the next shortened passage. Various forms of RR strategies have been shown to be effective for students with a learning disability such as, repeated reading aloud (Landa & Barbetta, 2017; O'Connor et al., 2007) and rereading the same passage until three consecutive fluency improvements were achieved (Nelson et al., 2004; Therrien, 2004). Students reading below grade level who have used RR have consistently shown improvements in fluency and comprehension (Chard et al., 2002).

According to Samuels (1979), RR also plays a pivotal role in improving comprehension. He found that comprehension may be lacking with the initial reading, but with subsequent readings the students were better able to comprehend the text because the decoding impediment to comprehension was gradually lifted. With decreasing focus on decoding, more attention becomes available for comprehension. Another strategy that allows for practice with word recognition skills used in conjunction with RR is SEC.

Error Correction Including Systematic Error Correction

SEC, a form of error correction, is a strategy used to improve accuracy and decoding when reading (Barbetta, Heward, & Bradley, 1993; Barbetta, Heron, & Howard, 1993; Nelson et al., 2004). Teacher feedback informs the student about correct and incorrect responses and allows for suggestions on correcting errors (Therrien & Kubina, 2006). RR plus SEC has been associated with fewer errors when reading and increased reading rates for students with disabilities (Barbetta, Heward, & Bradley, 1993; Barbetta, Heron, & Howard, 1993; Nelson et al., 2004). Researchers suggest that by combining RR and error correction, a student can improve his/her overall comprehension skills (Landa & Barbetta, 2017).

SEC consists of the following procedure: (a) The student reads the passage to the for 5 min; (b) each time the student makes an error the researcher says the correct word and the student rereads the word and the entire sentence; (c) after 5 min of reading, the researcher reviews all the words read incorrectly by pointing to them and asking the student to say them; (d) if the student makes an error during review, the researcher says the word and asks the student to repeat it; and (e) after SEC, the student rereads the entire passage while the researcher times them for 1 min and records WCPM and EPM (Nelson et al., 2004).

Repeated Reading, Error Correction and Comprehension

There are many studies that investigate the effectiveness of RR and SEC individually, but there are also studies that investigate the combined effects of these two reading interventions. For example, Landa and Barbetta (2017) investigated the effects of

RR on WCPM, EPM, and number of literal comprehension questions answered correctly with elementary students with an identified SLD. The intervention included (a) limited vocabulary instruction, (i.e., flashcards with possible challenging words to review prior to reading the passage) and (b) initial reading of the passage with minimal error correction (i.e., the teacher gave the misread word, and the student said the word and then reread the sentence with that word). Results demonstrated that all students read more WCPM, had fewer EPM, and increased the number of literal questions answered correctly during the repeated reading intervention and generalization probes.

The research on the implementation of repeated reading with students with SLD has shown positive outcomes for oral reading fluency and comprehension (Strickland et al., 2013). Therrien et al. (2006) showed that struggling readers and students with SLD made gains in reading fluency and comprehension when using repeated reading and self-generation of questions to monitor comprehension. Escarpio and Barbetta (2016) examined the effects of three conditions on the reading fluency, errors, and comprehension of sixth-grade students with emotional and behavioral disorders who had documented reading struggles. Results demonstrated that with the repeated readings, the students achieved the best in reading fluency, errors per minute, and correctly answering literal comprehension questions.

Rationale for the Current Study

The No Child Left Behind Act (NCLB) of 2001 and its successor, Every Student Succeeds Act (ESSA) of 2015, set a goal that every child be able to read at or above grade level by the time they leave third grade. NCLB and ESSA also state the

significance of schools using reading instruction that uses evidence- based strategies.

Schools want educators to teach the necessary reading instructional strategies; therefore, it is critical that educators know the strategies they implement are efficient and effective.

Pressley et al. (2006) found that reading is a critical skill for overall academic success (as cited in Landa & Barbetta, 2017). Fluency is one of the several critical factors necessary for skilled reading (National Reading Panel, 2000) and a defining characteristic of struggling readers is the inability to read text fluently (Strong et al., 2004). As noted, SLD impacts approximately 33% (2,343,00) of students nationally, and 8.7% (46,283) in Texas. Therefore, improving fluency, commonly known as the ability to read with speed and accuracy, would allow the vast number of struggling readers the opportunity to focus more on comprehension of text (O'Connor et al., 2007), thereby improving overall comprehension skills. Researchers have investigated various effective interventions for teaching reading skills, such as RR (Daly et al., 20002; Mercer et al., 2000; Vaughn et al., 2000) and RR plus error correction (Landa & Barbetta, 2017; Lo et al., 2011; Nelson et al., 2004; O'Connor et al., 2007) and found that by combining these two interventions a student with SLD can expect to increase their WCPM as well as increasing the number of correct responses to literal comprehension questions and decreasing EPM.

This study investigated the effects of RR plus SEC on WCPM, EPM, and comprehension for fourth and fifth grade students with a SLD. If the use of RR plus SEC increases the WCPM and comprehension and decreases the EPM (as hypothesized), this study will contribute to the current literature base on effective reading fluency and

comprehension strategies for teaching students with learning disabilities in upper elementary grades.

Terms

1. *Fluency*: Commonly known as the ability to read with speed and accuracy, allows the reader to focus more on comprehension of text (O'Connor et al., 2007).
2. *Specific Learning Disability*: Specific learning disorder (often referred to as learning disorder or learning disability, see note on terminology) is a neurodevelopmental disorder that begins during school age, although may not be recognized until adulthood. Learning disabilities refers to ongoing problems in one of three areas, reading, writing and math, which are foundational to one's ability to learn (American Psychiatric Association, 2013).
3. *Reading Disability*: typically identified as having a deficit in three fundamental cognitive processes, phonological processing (i.e., association of sounds with letters), syntactic awareness (i.e., ability to understand the rules of language, and working memory (i.e., ability to store information in short term memory while processing incoming information and retrieving information from long-term memory), constitutes the basic characteristics of a reading disability (Siegel & Mazabel, 2014).
4. *Repeated Reading*: consists of rereading a short and meaningful passage several times until an appropriate level of fluency is achieved (Samuels, 1979).

5. *Systematic Error Correction*: a form of error correction, is a strategy used to improve accuracy and decoding when reading (Barbetta, Heward, & Bradley, 1993; Barbetta, Heron, & Heward, 1993; Nelson et al., 2004).
6. *Words correct per minute*: the number of words read correctly aloud per minute (Landa & Barbetta, 2017).
7. *Error per minute*: the total number of errors read aloud during a one-minute recording (Tam et al., 2006).
8. *Reading Comprehension*: is the process of making meaning by using the information in the text and the reader's background knowledge (Lerner & Johns, 2009, p. 398).

CHAPTER III

METHODOLOGY

Multiple Baseline Across Participants Design

In a multiple baseline across participants study design, the implementation of the intervention condition is staggered across individuals. Because the intervention condition starts at different times for each participant, any changes in the dependent variable(s) can be attributed to the intervention rather than a coincidental factor. Analyzing data across multiple participants provides evidence of the potential for generalization of the impact on the dependent variable to a larger population. In a multiple baseline design, the researcher takes baseline (i.e., pre-intervention) data on the behavior of interest, implements the intervention, and collects post-intervention data over time. Interventions are introduced to participants only after a stable baseline trend is observed; data collection continues until data demonstrate stability (Christ, 2007). Data that indicate a repeated change in the behavior of interest (as demonstrated by level and trend in visual analysis of the data) upon introduction of the intervention condition likely indicate effectiveness of the intervention.

The current study used a single subject, multiple baseline across participants design (i.e., the same behavior was measured across multiple participants) to investigate the effects of RR plus SEC on the oral reading fluency, accuracy, and comprehension of elementary students with a SLD. Single case research designs (e.g., multiple baseline across participants) are appropriate for educational settings because of the flexibility (i.e.,

the pace is based on learner performance, rigorous controls for internal validity threats, and feasibility for educators' research attempts to align with their instructional practices (Gast & Ledford, 2014). Several repeated reading studies have implemented a multiple baseline across participants design (e.g., Landa & Barbetta, 2017; Lo et al., 2011; Nelson et al., 2004).

Setting

Before starting any research or participant recruitment, I obtained the appropriate consents from the university's institutional review board as well as parental adult consent and student assent. Because of the COVID-19 pandemic at the time of the study, all sessions took place via Zoom. I had a premium Zoom account and held and recorded all pre-study, baseline, intervention, and maintenance sessions virtually (i.e., using Zoom). Student participants attended the Zoom sessions in whatever virtual school learning spaces they had at home, which included a desk in a living room, a den, a bedroom, and a kitchen table. For all sessions, I was at a desk in my den, and the research assistant sat at a desk in his bedroom.

Subject Recruitment

Subject recruitment included sending a university campus-wide email, social media posts on my Facebook page and several community Facebook pages (i.e., a parent-run group page for students who were being taught virtually and a neighborhood-run page in a northeast Texas suburb), and posts on my Twitter and Instagram feed. Ultimately, the four participants (from two different school districts) were recruited from

the Facebook neighborhood-run page and the Facebook parent-run page. See a copy of the recruitment email in Appendix B and a copy of the social media post in Appendix C.

Participants

The current study was based on suggestions for future research in the discussion section of a published study conducted by Landa and Barbetta (2017). Landa and Barbetta (2017) suggested that future research should consider the use of systematic error correction (Nelson et al., 2004) in conjunction with repeated reading with individuals of various ability and age levels. To test the effects of RR plus SEC, participants in the current study were students in grades 4 - 5 who were identified as having a SLD. The IDEA and TEA definitions of SLD were used to determine the inclusion criteria for the current study. The IDEA (2004) definition of SLD, the most widely used definition of SLD, is:

The term “specific learning disability” means a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken, or written, which disorder may manifest itself in an imperfect ability to listen, think, speak, write, spell, or do mathematical calculations. Disorders

Included- Such terms include such conditions as perceptual disabilities, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia.

Disorders Not Included- Such term does not include a learning problem that is primarily the result of visual, hearing, or motor disabilities, of mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (P.L. 108-466, Sec. 602[30])

The TEA definition (§89.1040) is:

A student with a learning disability is one who: (i) has been determined through a variety of assessment tools and strategies to meet the criteria for a specific learning disability as stated in 34 CFR, §300.8(c)(10), in accordance with the provisions in 34 CFR, §§300.307-300.311; and (ii) does not achieve adequately for the student's age or meet state-approved grade-level standards in oral expression, listening comprehension, written expression, basic reading skill, reading fluency skills, reading comprehension, mathematics calculation, or mathematics problem solving when provided appropriate instruction, as indicated by performance on multiple measures such as in-class tests; grade average over time (e.g. six weeks, semester); norm- or criterion-referenced tests; statewide assessments; or a process based on the student's response to evidence-based intervention; and (I) does not make sufficient progress when provided a process based on the student's response to evidence-based intervention (as defined in 20 USC, §7801(21)), as indicated by the student's performance relative to the performance of the student's peers on repeated, curriculum-based assessments of achievement at reasonable intervals, reflecting student progress during classroom instruction; or (II) exhibits a pattern of strengths and weaknesses in performance, achievement, or both relative to age, grade-level standards, or intellectual ability, as indicated by significant variance among specific areas of cognitive function, such as working memory and verbal comprehension, or between specific areas of cognitive function and academic achievement.

This excluded students with the primary special education eligibility criteria of: auditory impairment, emotional disturbance, intellectual and developmental disabilities (including autism spectrum disorder), multiple disabilities, orthopedic impairment, other health impairment, speech impairment, traumatic brain injury, and visual impairment. Students that are receiving ESL services were also excluded.

Four students with an SLD in reading in grades 4 - 5 participated in this study.

See Appendix A for complete parent-reported demographics for each student.

I scheduled and held virtual initial meetings with each participant and their parent(s) at each family's convenience. During these meetings, I reviewed the study procedures, answered any questions from the participants and parents. The meetings ended with demographic questions (e.g., "What ethnicity is your child?"). See a copy of the interview questions in Appendix D.

Student 1

Ingrid is a Hispanic female student who was 10 years old and in fifth grade at the start of this study. She qualified for special education services in preschool as a student with a speech impairment. When she was reevaluated in fourth grade, Ingrid qualified for special education services primarily as a student with a SLD in reading fluency, reading comprehension, and written expression; she also had a secondary qualifier of Other Health Impairment (ADHD).

Student 2

Becky is a White female student who was 9 years old and in fourth grade at the start of this study. She qualified for special education services in the third grade as a student with a SLD in reading (i.e., dyslexia).

Student 3

Adam is a White male student who was 10 years old and in fifth grade at the start of this study. He qualified for special education services in the fourth grade as a SLD in reading (i.e., dyslexia).

Student 4

Gage is a White male student who was 10 years old and in fifth grade at the start of this study. He qualified for special education services in the first grade as a student with an SLD in reading.

Independent Variables

The independent variables in this study were RR plus SEC. I implemented the following procedure for SEC with each participant for initial and subsequent passage readings: (a) the student read the passage aloud; (b) each time the student made an error, I said the correct word and the student reread the word and the entire sentence; (c) after reading the passage I reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word, and asking the student to say each word one at a time; (d) when the student made an error during review, I said the word and asked the student to repeat it; and (e) I asked the student to reread the entire passage after SEC and I timed the student for 1 min and recorded

the WCPM and EPM. I began each intervention session by having the student complete an initial 5 min reading of the passage with SEC with each participant. Additionally, each participant read the passage two more times with limited error correction (i.e., when the student made an error, I said the word correctly and the student repeated the word but did not reread the entire sentence; Nelson et al., 2004).

Dependent Variables

The dependent variables were oral reading fluency (ORF; as measured by WCPM), EPM, and reading comprehension. ORF was measured by the number of WCPM. Words read aloud were determined to be correct if the student (a) independently pronounced the word aloud correctly without prompting within 3 s and (b) self-corrected within 3 s of mispronouncing the word.

EPM was determined by the total number of errors read aloud per 1 min reading. Errors were defined as (a) omission, when the student did not read printed word in a passage; (b) addition, when the student read a word that was not printed in the passage; (c) mispronunciation, when the student read a printed word incorrectly; (d) substitution, when the student read a different word than the one printed in the passage; and (e) hesitation, when there was a delay of more than 3 s between reading the end of one word and the beginning of the next word.

Reading comprehension was determined by using the Cloze procedure with Maze passages created by the researcher. For the Cloze procedure (Wayman et al., 2007), the student read a passage with a fully intact first sentence and every seventh word (in each subsequent sentence) replaced with three different options in which one of the three

words is both grammatically and logically correct while the other two are meant to distract the student. The student was given 3 min to read each passage and was asked to select the option (from among the three choices) that made the most sense within the context of the sentence. See Appendix D for Cloze procedure protocol.

Inter-observer Reliability and Fidelity Checks

The research assistant (who held a Ph.D. in special education), and I met to determine interobserver agreement (IOA) for 24 of the 70-total session of sessions. To determine IOA, the research assistant had a copy of the passage the student was reading and independently marked any errors as the student read (while I did the same). When we marked the same word as correct or incorrect, this was considered “agreement.” When the assistant's indication of words correct or incorrect were different than mine, this was considered “disagreement.” IOA was calculated by dividing the total number of agreements by the total number of opportunities, (21 out of 24) and multiplying by 100 (Gast & Ledford, 2014). Overall, IOA for the study was 87.5%. The research assistant also conducted procedural fidelity checks for 34% (24 out of 70) of the sessions. We assessed fidelity of baseline procedures (see Appendix F), the RR plus SEC used during the intervention sessions (see Appendix G), the maintenance procedures (see Appendix H), and administration of Dynamic Indicators of Basic Early Literacy Skills (DIBELS) ORF (see Appendix I for administration rules), and DIBELS Maze probes (see Appendix J for administration rules) to ensure I was maintaining the correct experimental procedures. Procedural fidelity was calculated by dividing the number of observed behaviors by the number of planned behaviors (i.e., the protocol listed in the Procedural

Fidelity Checklists) and multiplying by 100 (Gast & Ledford, 2014). Procedural fidelity was 100% for all checks conducted.

Procedure

Pre-study Condition

Prior to beginning data collection, DIBELS Benchmark Assessment (University of Oregon, 2018-19) ORF probes were given to each participant individually to determine the appropriate reading level for passages to be used in the study.

Maze passages were created using the Cloze procedure and verified by the research assistant. The passages were randomly assigned to baseline, intervention, and generalization conditions using an online random number generator tool. I input the range (i.e., the corresponding number for each passage) and number of passages I wanted for each phase and the online calculator gave me the passage numbers that I used for each phase. Maintenance passages were chosen from the ones used during intervention. Ingrid, Adam, and Gage were given fourth grade level passages, and Becky was given third grade passages. All four students' average scores fell into the beginning of the year "intensive support; at risk" category according to the DIBELS 8th Edition Benchmark Goals sheet (University of Oregon, 2020).

Baseline Condition

The guidelines presented by Gast and Ledford (2014) indicate that concurrent and repeated data on all dependent variables should be collected prior to introduction of the intervention for all participants. Baseline data were gathered for each participant until zero-celerating trend directions for WCPM, EPM, and comprehension were shown. After

introducing the intervention to the first student, baseline data collection continued for the other students twice a week until intervention data for the first student showed stability; then, the intervention was introduced to the second student (and so on), creating a staggered introduction of the independent variable. Data on SEC were collected during baseline and intervention conditions, similar to Nelson, et al. (2004).

Data were also collected using DIBELS Progress Monitoring probes and scoring protocols for ORF; these probes began with a 5-min student reading of the passage with SEC and ended with fluency and comprehension assessments to obtain baseline data for WCPM, EPM, and comprehension. Scores for WCPM were calculated by totaling the words attempted and subtracting any errors; scores for EPM were calculated by totaling the number of words counted as errors (University of Oregon, 2019). Copies of these protocols are included in Appendix I. All baseline sessions occurred in 1-on-1 Zoom sessions except for the 34% (24 sessions) attended by the research assistant.

Reading comprehension was measured through a Cloze procedure that scored the participants' performance on the Maze passages I created for each ORF passage. The research assistant validated the Maze probes by taking a random sampling of approximately half of all the probes and checking that the proper procedure was followed to create the probes. We used DIBELS 8th Edition Maze scoring rules for these passages, which allow for one score that is achieved by adding the number of items answered correctly and subtracting one-half the sum of items answered incorrectly. A copy of the protocol is included in Appendix J.

After one 5-min passage reading, I assessed the participants' fluency and comprehension by having the student read the passage from that session aloud for 1 min and recording WCPM and EPM. Then, I gave the student the Maze comprehension passage. Finally, I thanked the student for their work. During all baseline probes, data were collected on all dependent variables (i.e., WCPM, ECM, and comprehension scores).

Intervention Phase

When an acceptable level of stability (i.e., data points were within one or two data points of the previous sessions scores) or a zero celeration trend direction was observed in a participant's baseline data, the intervention was introduced. The intervention phase began with an initial 5 min student reading of the passage with SEC. Then, the student read the passage two more times for 1 min each with limited error correction (i.e., if they made an error, I said the word correctly and the student repeated the word). Each session ended with fluency and comprehension assessments of WCPM, EPM, and reading comprehension except for every third session when generalization probes were given. All intervention sessions occurred in 1-on-1 Zoom sessions (except for the 34% attended by the research assistant) two times a week for approximately 15 - 30 minutes per session. During all intervention probes, data were collected on all dependent variables.

Generalization and Maintenance

For the generalization probes, similar but untaught DIBELS, ORF, and Maze comprehension probes that I created were administered after every third intervention session to test the generalization of the effects of repeated readings. During

generalization probes, participants read aloud for 1 min with limited error correction and were evaluated using a Maze comprehension probe. During all generalization probes, data were collected on all dependent variables.

During the maintenance phase, students were assessed at two and three weeks after the last intervention session (Landa & Barbetta, 2017). Maintenance probes included an initial 5-min reading with SRC followed by two 1-min readings with limited error correction and ended with fluency and comprehension assessments. Maintenance passages were chosen from the first 2 passages used during intervention to ensure that the passages chosen were not the most recently taught. During all maintenance probes, data were collected on all dependent variables. All maintenance sessions occurred during 1-on-1 Zoom sessions except for the 3 out of 8 sessions (37.5%) attended by the research assistant.

Data Analysis

Data were visually analyzed to determine whether there were between-phase changes in each student's response level. Specifically, visual analysis was used to evaluate whether there was a change in the data level or trend for WCPM, EPM, and comprehension, as measured by the Maze probes, when the intervention of repeated reading plus systematic error correction was introduced.

The percentage of nonoverlapping data (PND) is a frequently used statistic for the measurement and meta-analysis of single-case research designs (Scruggs & Mastropieri, 1998). This measurement is characterized as a meaningful mark of the soundness of the treatment effectiveness. To calculate PND, the percentage of data points during the

intervention phase that exceeded the maximum values in the baseline phase divided by the total number of data points in the intervention phase and multiplying by 100% was calculated. The number of non-overlapping intervention points was divided by the total number of intervention data points to determine the PND. Additionally, mean numbers for WCPM, EPM, and comprehension for all four students across all phases were reviewed.

Validity Measures

Gast and Ledford (2014) stated that whether educational objectives or gains have any social significance should be left up to the individuals who are directly affected (i.e., the participants) and that significance can be determined through opinion surveys, interviews, or questionnaires. I gave an informal questionnaire (i.e., created through PsychData) to participating students and their parents at the conclusion of this study to assess the social validity of the intervention. Topics addressed included the ease of implementation of the interventions, likelihood of continued use of interventions, and increase in confidence in reading ability. I emailed the parents and asked them to assist their child in completing the anonymous questionnaire at the conclusion of the maintenance phase. At that time, I also asked the parents to complete an anonymous survey. The 4-question survey used a 7-point Likert scale, with 7 representing *strongly agree* and 1 representing *strongly disagree*, to determine participant satisfaction with the interventions. See Appendix K for copies of the questionnaires.

CHAPTER IV

RESULTS

The current study investigated the effects of RR plus SEC on WCPM, EPM, and comprehension for fourth- and fifth-grade students with an SLD. Baseline session consisted of each student reading the randomly chosen passage for 5 min while the researcher used SEC, followed by the 3-min Maze comprehension probe. During each intervention session, the primary researcher used an initial 5-min reading of the passage and SEC. Next, the student reread the passage two more times for 1 min each with limited error correction (i.e., RR). Then, the student did a final 1-min reading of the passage while the primary researcher recorded WCPM and EPM. Finally, the student had 3 min to complete the Maze comprehension probe. Every third intervention session, a generalization fluency and Maze probe were given where the student read the passage for 1 min while WCPM and EPM were recorded followed by the 3-min Maze comprehension probe. Maintenance sessions occurred at two and three weeks after each student's last intervention session. The following section reports the results for the four student participants.

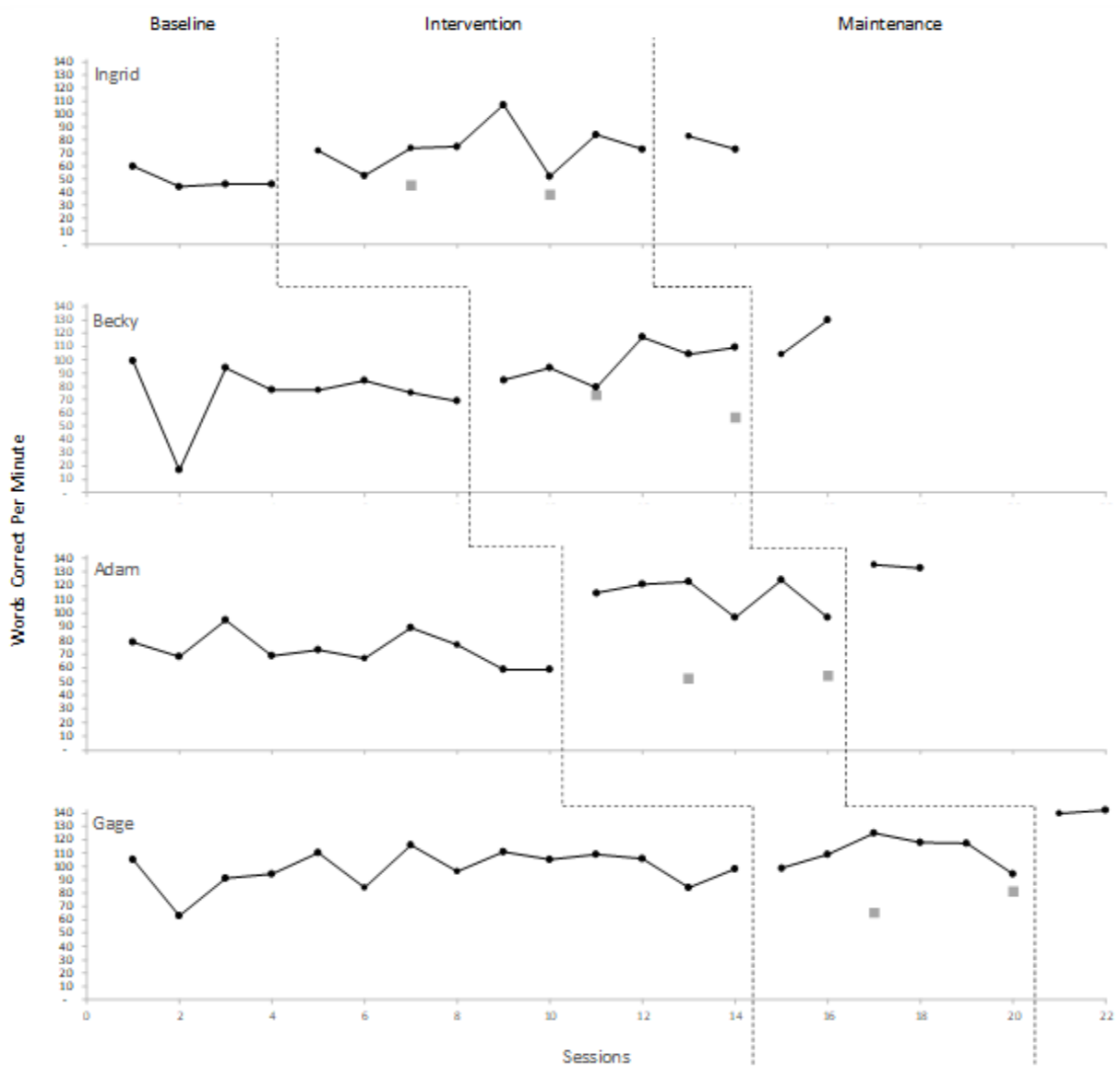
Overview of the Results

Figures 1, 2, and 3 provide a graphic representation of the WCPM, EPM, and Maze comprehension scores for each of the four students across all study phases. The data were visually analyzed to determine whether there were between-phase changes in each student's response level. Specifically, visual analysis was used to evaluate whether there was a change in the data level or trend for WCPM, EPM, and comprehension, as

measured by the Maze probes, when the intervention of repeated reading plus systematic error correction was introduced. The mean level of performance for each phase was also calculated and is reported in Table 2.

Figure 1

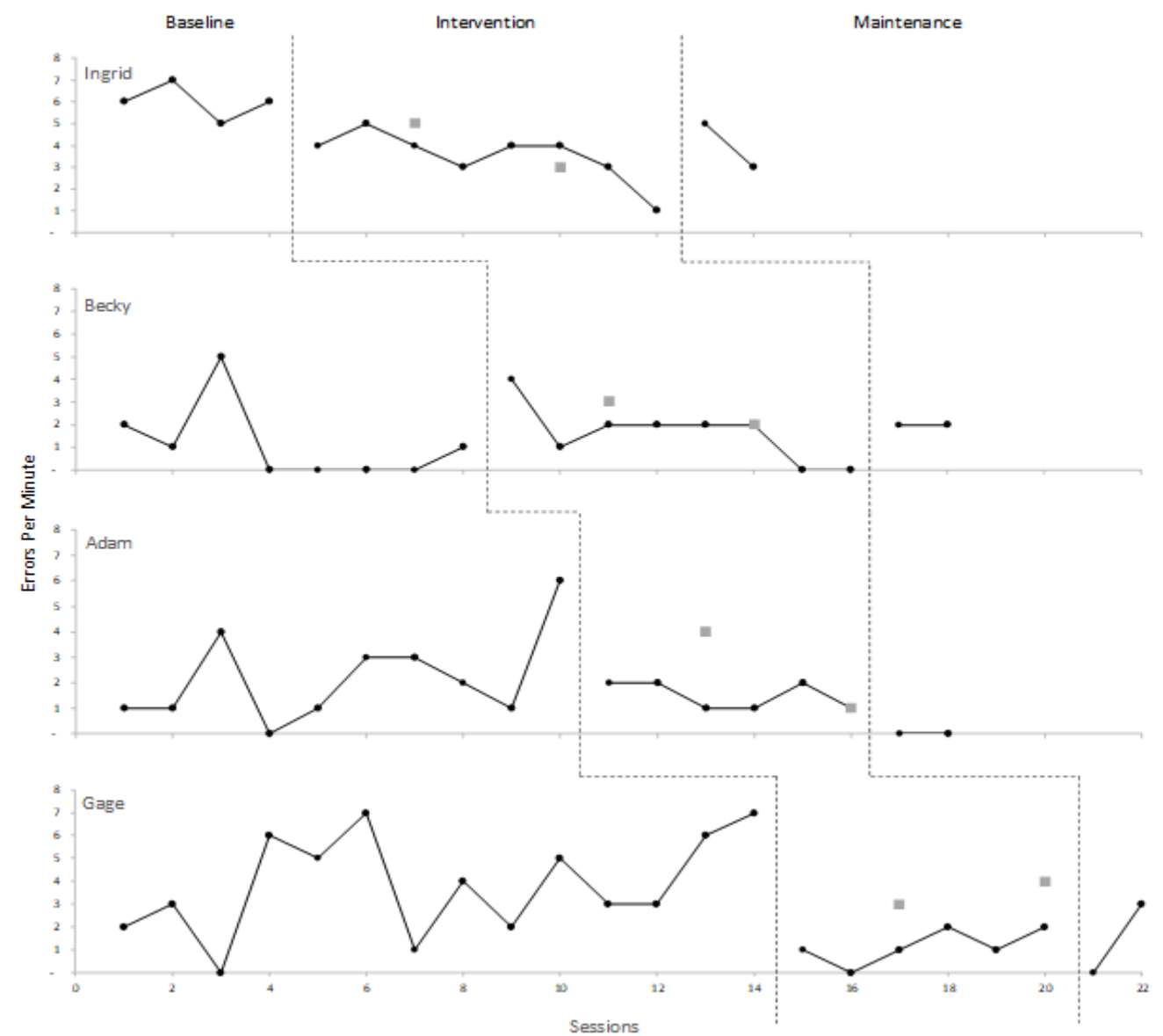
Participant's Number of WCPM



Note. □ represents the generalization score.

Figure 2

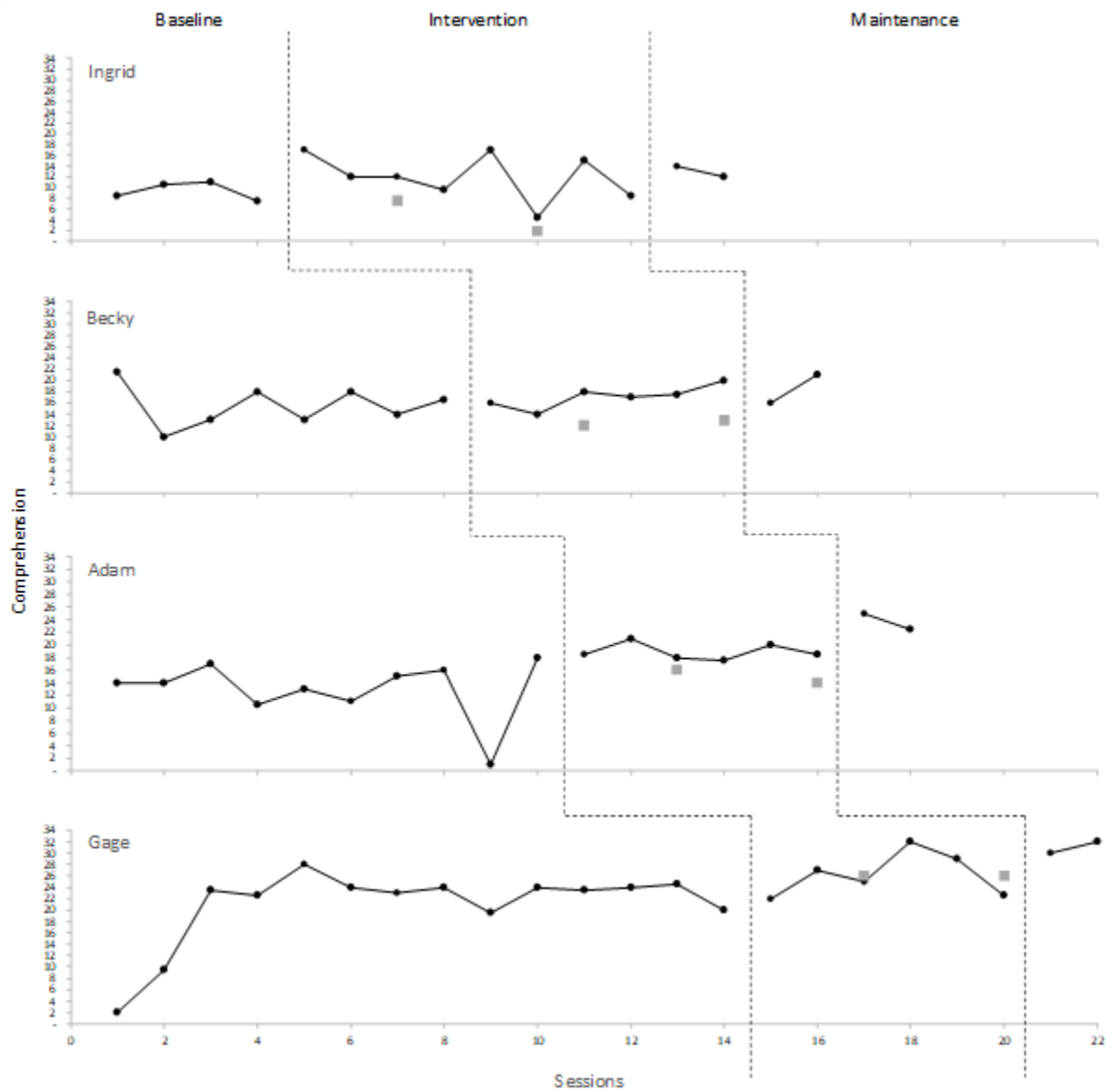
Participant's Number of EPM



Note. □ represents the generalization score.

Figure 3

Participant's Maze score



Note. □ represents the generalization score.

Table 2*Mean number of WCPM, EPM and Maze scores by phase for students*

Student	Baseline			Intervention		
	WCPM	EPM	Maze	WCPM	EPM	Maze
Ingrid	49	5.75	9.4	73.75	3.5	12
Becky	74	1.1	14.4	98	2.2	17.1
Adam	73.5	2.2	13.9	112.8	1.5	18.9
Gage	98	3.9	20.9	110.3	1	26.2

In addition, PND for WCPM and EPM between each participant's baseline and intervention phases were calculated. Scruggs and Mastropieri (1998) proposed that PND scores above 90% indicate a very effective intervention, scores from 70 to 90 % indicate an effective intervention, scores from 50 to 70% indicate questionable effects of an intervention, and scores below 50% indicate an ineffective intervention. The PND for WCPM was 75% for Ingrid, 50% for Becky, 100% for Adam, and 50% for Gage. The PND for EPM was 0% for Becky, Adam, and Gage (all of whom had observations with 0 EPM during baseline) and 87.5% for Ingrid. Figure 3 indicates the PND for Maze comprehension scores as: Ingrid, 62.5%, Becky, 16.67%, Adam, 66.67%, and Gage, 33.33%.

Student 1

Across four baseline sessions, Ingrid averaged 49 WCPM (range 44 - 60), 5.75 EPM (range 4 - 7), and 9.4 on Maze comprehension (range 7.5 - 11). During the intervention phase her scores averaged 73.75 WCPM (range 52 - 107), 3.5 EPM (range 1 - 5) and 12 on Maze comprehension (range 4.5 - 17). During her two generalization sessions her WCPM scores were 45 and 38, her EPM scores were 5 and 3, and her Maze comprehension scores were 7.5 and 2. During her two maintenance sessions and her WCPM scores were 83 and 73, her EPM scores were 5 and 3, and her Maze comprehension scores were 14 and 12. The PND for Ingrid (between baseline and intervention) across dependent variables was 75% for WCPM, 87.5% for EPM, and 62.5% for Maze comprehension.

Student 2

Becky had eight baseline sessions and averaged: 74 WCPM (range 17 - 99), 1.1 EPM (range 0 - 5), and 14.4 on Maze comprehension (range 10 - 18). The intervention phase consisted of six sessions with a generalization probe given immediately after every third intervention session. During the intervention phase her scores averaged 98 WCPM (range 79 - 117), 2.2 (range 1 - 4), and 17.1 on Maze comprehension (range 14 - 20). During her two generalization sessions her WCPM scores were 73 and 56, her EPM scores were 3 and 2, and her Maze comprehension scores were 12 and 13. During her two maintenance sessions her WCPM scores were 104 and 130, her EPM scores were 2 and 2, and her Maze comprehension scores were 16 and 21. The PND for Becky (between baseline and intervention) across dependent variables was 50% for WCPM, 0 observations for EPM, and 16.67% for Maze comprehension.

Student 3

Adam had 10 baseline sessions and averaged: 73.5 WCPM (range 59 - 95), 2.2 EPM (range 0 - 6), and 13.9 Maze comprehension (range 10.5 - 18). The intervention phase consisted of six sessions with a generalization probe given immediately after every third intervention session. During the intervention phase his scores averaged 112.8 WCPM (range 97 - 124), 1.5 (range 1 - 2), and 18.9 Maze comprehension (range 17.5 - 21). During his two generalization sessions his WCPM scores were 52 and 54, his EPM scores were 4 and 1, and his Maze comprehension scores were 16 and 14. During his two

maintenance sessions his WCPM scores were 135 and 133, his EPM scores were 0 and 0, and his Maze comprehension scores were 25 and 22.5. The PND for Adam (between baseline and intervention) across dependent variables was 100% for WCPM, 0 observations for EPM, and 66.67% for Maze comprehension.

Student 4

Gage had 14 baseline sessions and averaged: 98 WCPM (range 63 - 116), 3.9 EPM (range 0 - 7), and 20.9 Maze comprehension (range 2 - 24.5). The intervention phase consisted of six sessions with a generalization probe given immediately after every third intervention session. During the intervention phase his scores averaged: 110.3 WCPM (range 94 - 125), 1 (range 0 - 2), and 26.2 Maze comprehension (range 22 - 32). During his two generalization sessions his WCPM scores were 65 and 81, his EPM scores were 3 and 4, and his Maze comprehension scores were 26 and 26. During his two maintenance sessions his WCPM scores were 140 and 142, his EPM scores were 0 and 3, and his Maze comprehension scores were 30 and 32. The PND for Gage (between baseline and intervention) across dependent variables was 50% for WCPM, 0 observations for EPM, and 33.33% for Maze comprehension.

Inter-observer Reliability and Fidelity Checks

IOA was 87.5%. The research assistant conducted procedural fidelity checks for 34% (24 out of 70) of the sessions. Procedural fidelity was found to be 100%.

Social Validity

Results are listed in Tables 3 and 4.

Table 3

Social Validity Rating by Participants

Survey Item	Mean	Range
I think the reading practice I did was helpful.	4.75	1-7
I think I am a better reader now.	5.25	1-7
I want to use this reading practice with my teacher.	4.5	1-7
I like reading more than before I took part in this study.	4.0	1-5

Table 4*Social Validity Rating by Parents*

Survey Item	Mean	Range
I think the reading practice my child did was helpful.	7	7
I think my child is a better reader now.	7	7
I want to tell my child's teacher about this reading practice.	6.75	6-7
I think my child likes reading more than before she/he took part in this study.	5.5	4-7

CHAPTER V

DISCUSSION

One persistent characteristic of struggling readers is difficulty reading text fluently (Strong et al., 2004). Fluency, or the ability to read with speed and accuracy, affords the reader the opportunity to concentrate more on comprehension of text (O'Connor et al., 2007). Fluency is one of several critical components necessary for skilled reading (National Reading Panel, 2000). Pressley et al. (2006) stated that reading is a vital skill for overall academic success (as cited in Landa & Barbetta, 2017). Numerous effective interventions for teaching reading skills have been studied by researchers, including repeated reading (Daly et al., 2002; Mercer et al., 2000; Vaughn et al., 2000) and repeated reading plus error correction (Landa & Barbetta, 2017; Lo, et al., 2011; Nelson et al., 2004; O'Connor et al., 2007).

The current study built upon the Landa and Barbetta (2017) study by evaluating the effects of SEC (Nelson et al., 2004) used in conjunction with RR of familiar and unfamiliar text. The following research questions were investigated:

1. Does repeated reading plus systematic error correction result in a change in oral reading fluency (as measured by words read aloud correctly per minute), the number of errors read aloud per minute, and the number of comprehension questions answered correctly by the student with familiar text?

2. Does repeated reading plus systematic error correction result in the generalization of oral reading fluency (as measured by words read aloud correctly per minute), the number of errors read aloud per minute, and the number of comprehension questions answered correctly by the student with unfamiliar text?

The following section discusses the results of the current study in the context of these research questions and implications for future research and practice.

PND can be a meaningful indication of the validity of the treatment effectiveness (Scruggs & Mastropieri, 1998). Across WCPM, results indicated PND between baseline and intervention was 75% for Ingrid, 50% for Becky, 100% for Adam, and 50% for Gage. PND may have been higher for Ingrid and Adam because they struggled with fluency more than the other participants and they did not report using repeated reading before (while the other two participants did). Only Ingrid had a score above 0% PND (i.e., 87.5%) for EPM; the other three participants had at least one observation with zero EPM during baseline which led to complete overlap with all intervention sessions. Across the Maze comprehension scores, results indicated PND between baseline and intervention was 62.5% for Ingrid, 16.67% for Becky, 66.67% for Adam, and 33.33% for Gage. Ingrid and Adam, who struggled more than the other two participants with fluency, demonstrated more improvement on their comprehension scores during the intervention phase than the other two students perhaps improving their fluency allowed them to focus more on comprehension of the text.

Visual analysis was used to evaluate whether there was a change in the data level or trend for WCPM, EPM, and comprehension (as measured by the Maze probes), when the intervention was introduced. The level for WCPM increased immediately with the introduction of RR plus SEC for three of the students (i.e., Ingrid, Becky, and Adam); it took until the third intervention session to see an increase in Gage's level, which may be related to his higher level of fluency at the beginning of the study.

Only one student (Becky) demonstrated an increase in EPM (counter to the expected effect of the intervention) after the intervention was introduced, but the level immediately decreased and stabilized at a level similar to baseline. All other participants maintained levels below baseline. Becky always chose to read aloud when given the option during her comprehension assessments whereas the other three participants always read to themselves.

One student showed an immediate increase in level for comprehension (Ingrid) upon introduction of the intervention. The other three students required several intervention sessions to demonstrate an increase in their comprehension level. All four students showed inconsistent increases in their levels throughout the intervention sessions. Intervention sessions were held at various times of the afternoon and evening after the students had completed their regular school day.

When considering the data from all four of the students, there is the potential of this practice to improve reading outcomes with familiar text for students with an SLD. However, for all four students the potential for improving reading learning while using this intervention with unfamiliar text could not be concluded. However, there was one student, Gage, who had a fairly consistent positive trend, from baseline through maintenance, in WCPM, EPM, and comprehension.

Individual Participants

Student 1

When looking at Ingrid's data across all 4 phases for WCPM, and comprehension it showed an increase from baseline except for the generalization phase. Her data showed a decrease for EPM from baseline in all subsequent phases. Ingrid preferred to read to herself, which she always chose to do during the completion of the Maze comprehension probes.

Student 2

When looking at Becky's data across all 4 phases for WCPM, and comprehension it showed an increase from baseline except for the generalization phase. However, when looking at her EPM data from baseline to maintenance, it showed an increase in her errors from 1.1 to 2. Becky had expressed interest in leaving the study before our final 2 sessions but then she and her mom decided to remain when they were told that there were only 2 sessions remaining but did ask for a 1 week break which was granted.

Student 3

When looking at Adam's data across all 4 phases for WCPM, and comprehension it showed an increase from baseline across all subsequent phases. His also decreased his EPM data showed a decrease from baseline in all subsequent phases, even averaging 0 errors during maintenance. Adam always worked with a smile on his face, and he stated that he liked completing the RR and SEC practice during multiple sessions.

Student 4

When looking at Gage's data across all 4 phases for WCPM, it showed an increase from baseline across all subsequent phases, except for generalization. His comprehension data showed an increase from baseline for all subsequent phases. His EPM data showed a decrease from baseline in all subsequent phases. Gage started asking what his scores were after each session, starting during the intervention phase. He expressed pleasure when he would beat his previous score. He even started remembering his scores from week to week and would check my numbers against his recollection of his previous scores.

Limitations

The current study does have limitations that need to be considered when evaluating and interpreting the findings. The first limitation is that a virtual platform (i.e., Zoom) was used for all interactions and sessions during the study. Being virtual made it difficult for me to assist the students when they lost their place while reading which

sometimes took up some of their timed reading. Another related limitation was the occurrence of distractions in the home (e.g., pets, siblings, doorbells, etc.) that could cause participants to be off task during timed readings which could have affected the data. For most of the study, the students were also attending school, either virtually and/or in-person, so the effects academically (i.e., are some of their gains due to working with their teachers) and physically (i.e., students were sometimes tired by the time they got online to work with the researcher) could have impacted the data. Maturation is another limitation. The data collection started in mid- August and was completed by the end of November, for a total of 3.5 months. During this time, the students not only got physically older and more mature, but they were also receiving either virtual or in-person instruction from their classroom teacher(s), which could account for some of the positive data changes. A final limitation is the size and scope of the student population of the study. Four students with a SLD in reading makes it difficult to generalize the findings of the current study to a larger population.

Directions for Future Research

More research is needed to extend the findings of the present study. Participants from the following categories should be included: secondary level, varying ethnic and culturally diverse backgrounds, varying English language abilities, and disabilities. Future research should also investigate the use of a high fluency expectation (e.g., set number of WCPM at a high level). Using a variety of comprehension questions should

also be considered. A final area for future attention is the use of repeated readings in conjunction with other evidence-based interventions.

To further the body of this research, I would like to implement this intervention in a face-to-face setting in a classroom, which was the original intent of this study but had to be changed due to COVID-19 safety concerns. I would like to recruit participants with a SLD in reading across school settings, elementary, middle, and high school aged students to test the efficacy of this intervention in a classroom setting. Finding interventions for students with a SLD in reading that are also second language learners has proved to be particularly challenging, so I would also like to test the efficacy of this intervention with this population.

Implications for Educators

Finding simple interventions is crucial given the demands on educators, especially for those who instruct students with learning disabilities. Results from the intervention implementation as well as the social validity surveys indicate that the use of RR plus SEC could be not only beneficial for students with a reading disability, but also enjoyed by these students and lead to an increase in reading enjoyment. This study showed how a cost-free intervention and progress monitoring resource, DIBELS materials, used with students with a reading disability could positively impact their WCPM, comprehension, and lower EPM during the intervention and maintenance phases as well as increase reading enjoyment. Having cost-free resources to use when implementing evidence-based

interventions could be an invaluable asset for educators. Finally, educators can adapt the model of this study by implementing the interventions in a face-to-face model, which could also eliminate some of the limitations previously noted.

Summary

In this study, a multiple baseline across participants design was used to investigate the effects of RR plus SEC on WCPM, EPM, and comprehension when reading familiar and unfamiliar texts for students with a specific learning disability in reading. Results from the intervention implementation and the social validity surveys indicate that the use of RR plus SEC could be beneficial for students with a reading disability. Additional research is needed to investigate the effects of these interventions with various populations.

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APPENDIX A

Demographic Characteristics of Participants as Reported by a Parent

APPENDIX A

Demographic Characteristics of Participants as Reported by a Parent

Name	Ethnicity	Gender	Age	Eligibility
Ingrid	Hispanic	Female	10 years old	SLD in reading fluency, comprehension, written expression and OHI
Becky	White	Female	9 years old	Dyslexia
Adam	White	Male	10 years old	Dyslexia
Gage	White	Male	10 years old	SLD in reading

APPENDIX B

Recruitment Email

APPENDIX B

Recruitment Email

TWU Faculty, Staff, and Students:

My name is Patricia Flint, and I am a special education doctoral candidate, Dr. Randa Keeley is my advisor, from the Teacher Education Department here at TWU. I am emailing to ask if you have a child that she/he participate virtually, via an online platform such as Zoom, in my research study about the effects of repeated reading plus systematic error correction on reading fluency, the ability to read with speed, accuracy, and proper expression, and comprehension. Your child is eligible to be in this study if he/she is a student in third, fourth, or fifth grade with a specific learning disability. **This excludes students with the primary special education eligibility criteria of auditory impairment, emotional disturbance, intellectual and developmental disabilities (including autism spectrum disorder), multiple disabilities, orthopedic impairment, other health impairment, speech impairment, traumatic brain injury, visual impairment, and dyslexia. Students that are receiving ESL services will also be excluded from my study.**

If you decide to allow your child to participate virtually in this study, he/she will participate in a reading assessment that will determine the appropriate level of reading

passages your child will read during the study. Then your child will work virtually with the researcher twice a week. Your child will be reading passages provided by the researcher. The researcher will implement the interventions of repeated reading, rereading a short passage until an appropriate level of fluency and accuracy is achieved, and systematic error correction, for every error your child makes the researcher says the word and your child repeats the word. Then your child rereads the sentence containing the word. At the end of each session with your child, he/she will complete a fluency assessment, a one-minute timed reading of the passage while words correct and errors are recorded, and comprehension assessment, an assessment where your child reads incomplete sentences and fills in the blanks with the appropriate word that completes the sentence.

Also, your child will be asked to participate in an online survey at the conclusion of the study that measures their interest in the interventions used during the study and any increase in reading confidence.

Finally, with your permission, the research team will ask to provide, through an interview with the research team, information related to ethnicity, socio-economic status, gender, disability/ability classification, and whether your child receives additional services. This information will be kept confidential by the research team. It is important for the team to collect this information so that we may provide context to our findings.

Please note that all names will be removed from all intervention sessions, surveys, assessments, and additional information collected to protect the identity of all

participants. Also, there is a potential risk of loss of confidentiality in all email, downloading, electronic meetings and internet transactions.

Remember, this is completely voluntary. You can choose whether to allow your child to participate in the study. If you would like for your child to participate or have any questions about the study, please email or contact me at pflint@twu.edu or (214) 733-3555. **Please feel free to forward this email to any colleagues, friends, or family members that have a child that meets the inclusion/exclusion criteria.**

Thank you very much.

Sincerely,

Patricia Flint

APPENDIX C

Recruitment Facebook Post

APPENDIX C

Recruitment Facebook Post

Caption for social media posts:

Online study needs elementary-aged students with a learning disability in reading. Please see the pic for details. @TWUSpecialEd @TWUTeacherEd

Picture for social media posts:

My name is Patricia Flint, and I am a special education doctoral candidate, Dr. Randa Keeley is my advisor, from the Teacher Education Department here at TWU. I am posting to ask if you have a child that she/he participate virtually, via an online platform such as Zoom, in my research study about the effects of repeated reading plus systematic error correction on reading fluency, the ability to read with speed, accuracy, and proper expression, and comprehension. Your child is eligible to be in this study if he/she is a student in third, fourth, or fifth grade with a specific learning disability. **This excludes students with the primary special education eligibility criteria of auditory impairment, emotional disturbance, intellectual and developmental disabilities (including autism spectrum disorder), multiple disabilities, orthopedic impairment, other health impairment, speech impairment, traumatic brain injury, visual**

impairment, and dyslexia. Students that are receiving ESL services will also be excluded from my study.

If you decide to allow your child to participate virtually in this study, he/she will participate in a reading assessment that will determine the appropriate level of reading passages your child will read during the study. Then your child will work virtually with the researcher twice a week. Your child will be reading passages provided by the researcher. The researcher will implement the interventions of repeated reading, rereading a short passage until an appropriate level of fluency and accuracy is achieved, and systematic error correction, for every error your child makes the researcher says the word and your child repeats the word. Then your child rereads the sentence containing the word. At the end of each session with your child, he/she will complete a fluency assessment, a one-minute timed reading of the passage while words correct and errors are recorded, and comprehension assessment, an assessment where your child reads incomplete sentences and fills in the blanks with the appropriate word that completes the sentence.

Also, your child will be asked to participate in an online survey at the conclusion of the study that measures their interest in the interventions used during the study and any increase in reading confidence.

Finally, with your permission, the research team will ask to provide, through an interview with the research team, information related to ethnicity, socio-economic status, gender,

disability/ability classification, and whether your child receives additional services. This information will be kept confidential by the research team. It is important for the team to collect this information so that we may provide context to our findings.

Please note that all names will be removed from all intervention sessions, surveys, assessments, and additional information collected to protect the identity of all participants. Also, there is a potential risk of loss of confidentiality in all email, downloading, electronic meetings and internet transactions.

Remember, this is completely voluntary. You can choose whether to allow your child to participate in the study. If you would like for your child to participate or have any questions about the study, please email or contact me at pflint@twu.edu or (214) 733-3555. **Please feel free to forward this post to any colleagues, friends, or family members that have a child that meets the inclusion/exclusion criteria.**

Thank you very much.

Sincerely,

Patricia Flint

APPENDIX D

Parent Interview

APPENDIX D

Parent Interview

- What is your child's date of birth?
- What grade is your child currently in?
- What ethnicity is your child?
- Does your child receive free/reduced lunch?
- Which school district and school does your child attend?
- When did your child meet eligibility (start services) for special education services?
- Was the full and individual evaluation (FIE, testing for special education services) conducted through the school district or privately?
- What is your child's eligibility criteria (what did the ARD committee agree was the reason your child qualified for special education services)?
- What special education services (including setting(s)) does your child receive?
- How many minutes per week?

APPENDIX E
Cloze Procedure

APPENDIX E

Cloze Procedure

1. The student reads a passage for three minutes in which the first sentence is fully intact.
2. For the rest of the passage, every seventh word is replaced with three different options.
3. One of the three words is both grammatically and logically correct while the other two are meant to distract the student.
4. Finally, the student is asked to select one word that makes the most sense within the context of the sentence.

APPENDIX F

Baseline Sessions with Systematic Error Correction

APPENDIX F

Baseline Sessions with Systematic Error Correction

Student name: _____ Date: _____ Session: _____

- _____ 1. The student read the passage aloud for five minutes.
- _____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.
- _____ 3. After the student read the passage, the researcher reviewed all the words read incorrectly by writing them on a piece of paper one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word.
- _____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.
- _____ 5. The researcher then timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.
- _____ 6. The researcher asked the student to work for three minutes to complete the Maze comprehension assessment passage.

APPENDIX G

Intervention Phase: Repeated Reading Plus Systematic Error Correction Procedural

Checklist

APPENDIX G

Intervention Phase: Repeated Reading Plus Systematic Error Correction

Procedural Checklist

Student name: _____ Date: _____ Session: _____

_____ 1. The student read the passage aloud for five minutes.

_____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.

_____ 3. After the student read the passage the researcher reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word one at a time.

_____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.

_____ 5. The researcher asked the student to reread the passage two more times, for one minute each.

_____ 6. Then the researcher timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.

_____ 7. The researcher asked the student to work for three minutes to complete the Maze comprehension passage.

_____ 8. Every third session a similar but untaught DIBELS ORF for the one-minute fluency and accuracy assessment and Maze probe for the 3-minute comprehension assessment was given to test generalization of repeated reading effects.

APPENDIX H

Maintenance Phase: Procedural Checklist

APPENDIX H

Maintenance Phase: Procedural Checklist

Student name: _____ Date: _____ Session: _____

- _____ 1. The student read the passage aloud for five minutes.
- _____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.
- _____ 3. After the student read the passage the researcher reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word one at a time.
- _____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.
- _____ 5. The researcher asked the student to reread the passage two more times, for one minute each.
- _____ 6. Then the researcher timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.
- _____ 7. The researcher asked the student to work for three minutes to complete the Maze comprehension passage.

APPENDIX I

DIBELS Oral Reading Fluency and Scoring Procedures

APPENDIX I

DIBELS Oral Reading Fluency and Scoring Procedures

1. The researcher positioned the clipboard and timer so the student could not see what the researcher was recording.
2. The researcher put the student copy of the ORF form in front of the student.
3. The researcher said: “Please read this (the researcher pointed to the first word in the first paragraph of the passage) out loud. If you get stuck, I will tell you the word, so you can keep reading. When I say “Stop” I may ask you to tell me about what you read, so do your best reading. Start here. (The researcher pointed to the first word in the passage.) Ready? Begin.”
4. The researcher started the timer when the student said the first word of the passage. The researcher did not count the title. If the student failed to say the first word after three seconds, the researcher told the student the word and marked it as incorrect, then started the timer.
5. The researcher followed along with the researcher copy of the passage and put slashes (/) through each word read incorrectly.
6. At the end of one minute, the researcher placed a bracket (]) after the last word read and say “Stop.”
7. The researcher tallied the words read correctly and subtracted errors made per minute to determine WCPM.

APPENDIX J
DIBELS Maze Procedures

APPENDIX J

DIBELS Maze Procedures

1. The researcher said: “You are going to read a passage with some words missing from it. For each missing word you will see three bolded red words instead. Your job is to circle the word you think makes the most sense in the context of the passage.
2. The researcher then said,” Okay, when I say “Begin”, turn the page and start reading the passage silently. When you come to the bolded red words, read all the words, and circle the word that makes the most sense in the passage. You will stop when you come to the end or I say stop. Ready? Begin.”
3. The researcher started the timer and at the end of three minutes stopped the timer and said, “Stop.”
4. Scoring was determined by adding the number of items answered correctly and subtracting one-half the sum of items answered incorrectly.

APPENDIX K
Social Validity Questionnaires

APPENDIX K

Social Validity Student Questionnaire

Please fill out the survey based on the reading practice that you were asked to do as a student in this study. Choose whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree with the statements. Thank you for your time.

1.) I think the reading practice I did was helpful.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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2.) I think I am a better reader now.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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3.) I want to use this reading practice with my teacher.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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4.) I like reading more than before I took part in this study.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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Social Validity Parent Questionnaire

Please fill out the survey based on the reading practice that your child was asked to do in this study. Choose whether you strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree with the statements. Thank you for your time.

1.) I think the reading practice my child did was helpful.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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2.) I think my child is a better reader now.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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3.) I want to tell my child's teacher about this reading practice.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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4.) I think my child likes reading more than before she/he took part in this study.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
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APPENDIX L
Procedural Checklists

Appendix L

Procedural Checklists Baseline Sessions with Systematic Error Correction

Student name: _____ Date: _____ Session: _____

_____ 1. The student read the passage aloud for five minutes.

_____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.

_____ 3. After the student read the passage, the researcher reviewed all the words read incorrectly by writing them on a piece of paper one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word.

_____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.

_____ 5. The researcher then timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.

_____ 6. The researcher asked the student to work for three minutes to complete the Maze comprehension assessment passage.

Intervention Phase: Repeated Reading Plus Systematic Error Correction

Procedural Checklist

Student name: _____ Date: _____ Session: _____

_____ 1. The student read the passage aloud for five minutes.

_____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.

_____ 3. After the student read the passage the researcher reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word one at a time.

_____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.

_____ 5. The researcher asked the student to reread the passage two more times, for one minute each.

_____ 6. The researcher timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.

_____ 7. The researcher asked the student to work for three minutes to complete the Maze comprehension passage.

_____ 8. Every third session a similar but untaught DIBELS ORF for the one-minute fluency and accuracy assessment and Maze probe for the 3-minute comprehension assessment was given to test generalization of repeated reading effects.

Maintenance Phase: Procedural Checklist

Student name: _____ Date: _____ Session: _____

- _____ 1. The student read the passage aloud for five minutes.
- _____ 2. Each time the student made an error the researcher said the correct word and the student reread the word and the entire sentence.
- _____ 3. After the student read the passage the researcher reviewed all the words read incorrectly by writing them down one at a time, showing them in the camera one at a time, pointing to each word and asking the student to say each word one at a time.
- _____ 4. If the student made an error during review, the researcher said the word and asked the student to repeat it.
- _____ 5. The researcher asked the student to reread the passage two more times, for one minute each.
- _____ 6. Then the researcher timed the student for one minute and recorded the WCPM and EPM while using the rules from DIBELS Oral Reading Fluency.
- _____ 7. The researcher asked the student to work for three minutes to complete the Maze comprehension passage.