

**Using Repeated Reading to Increase Reading Fluency Among Postsecondary Students with
Intellectual Disabilities**

A Dissertation Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Marwah Ibrahim Alammari

August 2025

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ACKNOWLEDGMENTS

As my dream finally materializes, I cannot help but recall the countless tearful nights, the early mornings before the sun's rays, and the constant battle with alienation and homesickness over the past four years. There were moments when one path seemed dark, but another was illuminated with new skills, guiding me through the doctoral journey. Yes, I did it!

I sincerely thank my beloved son Sooni and daughters Noreen and Bushra. Your unwavering love, patience, and support have been my rock throughout this journey. Your sacrifices, your childhood, and your encouragement have motivated me, especially during the most challenging times. You are not just my family but an integral part of this journey.

To my parents, whose guidance, wisdom, and sacrifices have shaped me into the person I am today, I am deeply grateful. Your endless love and belief in me have been invaluable—a special thank you to my extended family for their constant support and encouragement. Your love and belief in my dreams have meant more than words can convey.

I would like to express my heartfelt gratitude to several individuals who have played a crucial role in my doctoral journey. Firstly, I want to thank Dr. Moore for her flexibility, guidance, and patience. Your mentorship throughout the doctoral program has been invaluable, and I truly appreciate your expertise, feedback, and encouragement during this process. I also want to recognize Dr. Smith, whose kindness and positive feedback have been a ray of sunshine in my PhD journey. Your warmth and positivity make a significant difference in my research journey.

I am grateful for Dr. Skinner, who brings fun and happiness to each class he teaches, as well as guidance. Lastly, I would like to thank Dr. Owens for her role in overseeing this research. Her time and input are sincerely appreciated.

ABSTRACT

Post-secondary education for learners with intellectual disabilities (ID) is a crucial step towards a better quality of life. Reading skills, among the most important skills for success in life, are a key area that needs attention. However, educators, policymakers, and advocates need to recognize the need for a more balanced approach that includes academic skills, particularly reading. This study examined the effects of repeated reading (RR) on reading fluency among four post-secondary students, aged 20-24 years, enrolled in a transition program on a large university campus. While some students demonstrated benefits from RR, such as better comprehension and the ability to track their progress, these gains were inconsistent and not substantial. The study highlights the need for further research, suggesting that reading fluency alone may not be sufficient to enhance reading fluency in this population and may require additional strategies for success. Limitations such as a small sample size and the short study duration indicate a need for more effective literacy interventions tailored to older students with ID.

TABLE OF CONTENTS

CHAPTER ONE READING FLUENCY FOR YOUNG ADULTS WITH ID	1
Barriers to Postsecondary Reading Fluency for ID	1
<i>Postsecondary Education Program</i>	3
<i>Section 504 of the Rehabilitation Act of 1973</i>	4
<i>Repeated Reading</i>	6
<i>Oral Reading Fluency</i>	7
Theoretical Framework.....	8
Developmental Theories and Intellectual Disabilities	9
<i>Piaget’s Theory of Cognitive Development (1952)</i>	9
<i>Vygotsky’s Sociocultural Theory (1978)</i>	10
<i>Automaticity Theory in Reading</i>	11
<i>Scarborough’s Reading Rope</i>	13
<i>Applied Behavior Analysis</i>	14
CHAPTER TWO READING FLUENCY: A REVIEW OF THE LITERATURE.....	16
Repeated Reading Interventions	16
Combined Repeated Reading with Other Interventions	18
<i>Repeated Reading combined with Silent Reading</i>	18
<i>The Use of Repeated Reading Combined with Word Boxes Phonics</i>	18
<i>Using Repeated Combined with Question Generation Intervention</i>	19
<i>Repeated Reading with Error Correction</i>	21
<i>Repeated Reading Using Technology</i>	23
Gaps in Reading Fluency Research	24

Purpose of the Study	26
CHAPTER THREE USING REPEATED READING TO INCREASE READING FLUENCY AMONG POSTSECONDARY STUDENTS WITH ID	
28	28
Method and Materials	28
Participants.....	28
Setting	31
Materials	31
Research Design.....	34
Dependent Variables.....	35
Independent Variable	37
<i>First Reading</i>	39
<i>Second Reading</i>	39
Maintenance	41
Interobserver Agreement	41
Social Validity	42
Treatment Integrity	42
CHAPTER FOUR RESULTS AND DISCUSSION	
43	43
Results.....	43
Social Validity	50
Interobserver Agreement	51
Treatment Integrity	52
Discussion.....	52
CHAPTER FIVE CONCLUSION AND RECOMMENDATIONS	
57	57

Summary	57
Limitations	58
Future Research	59
Conclusion	61
LIST OF REFERENCES	62
APPENDICES	75
Appendix A. The Students' Consent Form	75
Appendix B. Example of the Reading Passage.....	79
Appendix C. The Readability Statistics for the Passage.....	81
Appendix D. Data Sheet	82
Appendix E. Baseline and Maintenance Steps	83
Appendix F. List of Steps for Intervention Session.....	84
Appendix G. Gathering Data Sheet	86
Appendix H. Treatment Integrity Checklist (Baseline)	87
Appendix I. Treatment Integrity Checklist (Intervention).....	88
Appendix J. The Social Validity.....	89
Appendix K. WCPM performance across phases and passage texts tables.....	90
Appendix L. Passage Titles and Errors Per Minute During Intervention Sessions for Each Participant	92
VITA.....	93

LIST OF TABLES

Table 1. Characteristics Of The Participants	30
Table 2. The Participants' Number Of Sessions For Each Phase	43
Table 3. WCPM's Range, Mean, And Median For Participants	49

LIST OF FIGURES

Figure 1. Participants' Number of WCPM for Baseline, Intervention, and Maintenance ...46

CHAPTER ONE READING FLUENCY FOR YOUNG ADULTS WITH ID

Barriers to Postsecondary Reading Fluency for ID

Students with intellectual disabilities (ID) utilize the same cognitive processes as their peers when learning to read. Therefore, they should be taught using methods similar to those employed for students without intellectual disabilities. Instruction should be comprehensive and contextual, emphasizing the creation of meaning through text. Placing a greater emphasis on reading for all students can enhance their engagement with the general curriculum and help them acquire meaningful skills. The National Reading Panel (NRP, 2000) identified five core components essential for effective reading instruction: phonemic awareness, phonics, fluency, vocabulary development, and text comprehension. There were few studies published in the early 2000s that examined reading comprehension for students with ID, such as a longitudinal study done by Allor and colleagues (2010). In their paper, they discussed how sight word recognition was utilized in their research, which involved 63 elementary students with IQ scores ranging from 40 to 79. The intervention focused on explicit reading instruction, emphasizing phonemic awareness, phonics, fluency, vocabulary, and comprehension.

Improving reading fluency in young adults with ID is essential for unlocking their potential. Mastering reading skills not only boosts academic performance but also fosters independence and self-confidence. By investing in targeted interventions and support, we can empower these individuals to engage more fully with the world around them, enriching their lives and creating opportunities for personal growth. Educators must commit to fostering an inclusive environment where every young adult can thrive through the power of reading.

Lee and Taylor (2022) conducted a systematic review targeting studies of students with IDs attending postsecondary education (IPSE). In their paper, they focused on four areas:

adaptive behavior, employment, independence, and healthy lifestyle. Their research, based on students with ID in IPSE, indicated several positive outcomes. Participation in IPSE programs for individuals with ID led to improvements in adaptive behaviors, including socialization, daily living skills, and overall independence. Students had reported making new friends, feeling more independent, and acquiring skills such as meal preparation and using public transportation. Employment outcomes were also favorable, with higher employment rates and better job quality compared to non-integrated programs. Many graduates secured positions in office support or sales roles. Additionally, IPSE-ID graduates were more likely to volunteer and live independently. The impact of IPSE-ID programs extended to the campus community, where they helped increase awareness, knowledge, and foster more positive attitudes toward disability, especially among peer mentors and instructors (Grigal et al., 2012).

Young Adults with ID in Postsecondary Education

In recent years, advocates for students with ID have been increasing efforts to promote inclusion in postsecondary education. “Intellectual disability” refers to limitations in intellectual functioning and adaptive behavior, which impact daily life skills (American Psychiatric Association, 2013). Besides these challenges, many young adults with ID these days are attending colleges, universities, and vocational programs, benefiting from inclusive educational models that foster academic, social, and professional growth. The American Association on Intellectual and Developmental Disabilities (2022) defines intellectual disabilities as conditions characterized by significant limitations in both intellectual functioning and adaptive behavior, with onset occurring during the developmental period of life, which spans from birth to 22 years of age. Schalock et al (2021) used the Manual’s Content Definition of Intellectual Disability to identify the five assumptions that are essential for effectively applying this definition.

- a) Limitations in present functioning must be considered within the context of community environments typical of the individual's age peers and culture.
- b) A valid assessment considers cultural and linguistic diversity as well as differences in communication, sensory, motor, and behavioral factors.
- c) Within an individual, limitations often co-exist with strengths.
- d) A key purpose of describing limitations is to develop a profile of the necessary supports.
- e) With appropriate, personalized support over a sustained period, the life functioning of the person with ID generally improves. (p. 440)

Historically, young adults with ID were frequently excluded from attending higher education; without a doubt, current policy changes, societal changes, and advocacy efforts have contributed to a more inclusive environment in postsecondary education. The Americans with Disabilities Act (ADA) and the Individuals with Disabilities Education Act (IDEA) have paved the way for more significant access to higher education, promoting equality and providing necessary accommodations for students with disabilities (U.S. Department of Education, 2020). Hence, more colleges and universities are developing specialized programs that support students with ID to succeed academically, socially, and professionally (Grigal et al., 2019).

Postsecondary Education Program

Postsecondary education programs that focus on students with ID provide a range of programs that emphasize both academic and vocational success. These inclusive college programs enable students with ID to attend regular classes alongside their peers without disabilities. Students in IPSE programs may be eligible to receive academic accommodations,

including tutoring, mentorship, and flexible exam schedules. Depending on the program, students may have the opportunity to earn degrees or certifications (Grigal et al., 2012).

Certificate or Vocational Programs emphasize teaching students' specific skills needed for certain trades or professions. These programs prepare students with ID for successful employment after graduation. In addition, these programs may be offered at specialized colleges or as part of larger institutions (Garrow et al., 2019). Transition programs are designed to help students with ID transition from high school to postsecondary education. These programs often blend academic instruction with life skills training, assisting students to build independence, social skills, and employability (Brock et al., 2015).

Postsecondary education is a transformative journey for students with ID, offering them a multitude of benefits. It provides them with opportunities to practice autonomy, manage their schedules, coursework, and personal responsibilities, thereby fostering self-reliance (Grigal et al., 2019). College life provides a platform for students to build friendships, participate in extracurricular activities, and develop social and communication skills, which are not only vital but also reassuring for their future life (Brock et al., 2015). Moreover, it broadens their access to a wider range of career opportunities. Through specialized programs, students with ID gain relevant skills that employers value, enhancing their employability (Garrow et al., 2019). The college environment equips them with the tools and experiences necessary to advocate for themselves in various settings, be it at school, in the workplace, or within the community (Grigal et al., 2012).

Section 504 of the Rehabilitation Act of 1973

Section 504 of the Rehabilitation Act of 1973 (28 CFR 35.104) protects college students with disabilities, requiring colleges and universities to provide equal access to educational

opportunities and services for these students. Notably, schools receiving federal funds are prohibited from discriminating based on disability (U.S. Department of Education, 2020). Students with documented disabilities can request modifications or accommodations to participate in and access educational programs fully. Colleges and universities must ensure they do not:

- Only students with disabilities have access to the program
- Ensure the students' disabilities before admission
- Use admissions tests that do not accommodate disabled students with disabilities
- Exclude qualified students with disabilities from any courses
- Discriminate in financial assistance or scholarship opportunities
- Counsel students with disabilities toward more restrictive career paths
- Use assessment methods that disadvantage students with disabilities
- Create policies that adversely affect students with disabilities.

The law mandates that schools provide necessary aids to ensure students with disabilities can fully participate in educational programs (U.S. Department of Education, 2020).

Young adults who struggle to read often face a deficit of fluency, read slowly, and frequently take time to decode words. They may also reread parts of a passage to improve comprehension. As a result, these readers often devote so much time and mental energy to figuring out individual phrases that they lose focus on comprehending the text's overall meaning (NICHD, 2004). However, with the right support and strategies, these readers can significantly improve their fluency, inspiring hope and motivation in educators (NICHD, 2004). Another challenge for young adults who struggle to read, as well as all readers, is that their fluency can fluctuate due to various factors. A key factor is the difficulty level of the passage (NICHD, 2004)

Being mindful of this can help educators better understand the struggles faced by these readers. However, it's essential to recognize that fluency is a multifaceted issue influenced by factors such as the reader's familiarity with the words, content, and genre, as well as their familiarity with the text. Therefore, a reader who is fluent at one point but does not continue to read regularly or widely might experience difficulty with fluency in the future or particular contexts (Archer et al., 2003).

Repeated Reading

Repeated reading (RR) is a technique used to enhance reading fluency and comprehension skills. It involves reading a short and meaningful passage multiple times until the reader reaches satisfactory fluency. Dahl and Samuels introduced this strategy in the 1970s, which has been effective for students with and without disabilities (Therrien, 2004). It was later supported by the National Institute of Child Health and Human Development (NICHD) in 2000. According to Samuels (1997), the child's brain is trained to recognize words quickly and easily through the use of RR. This process helps to improve overall reading success, especially for those children who have difficulty decoding and need to memorize text. The four strategies for RR instruction are a) echo-reading with the teacher, b) reading along with a pre-recorded voice, c) choral reading with the class, and d) independent repeat reading (NICHD, 2000).

While considerable research has been conducted on RR interventions to support students with learning disabilities or reading difficulties, the literature on their effectiveness for students with ID at the elementary level is limited. However, some studies have looked at combining RR with other instructional components or using it as part of a broader reading program for students with ID, which showed promise in supporting their literacy development (Allor et al., 2010; Allor et al., 2014; Mefferd & Pettegrew, 1997; Musti-Rao et al., 2009). Therrien (2004)

conducted a meta-analysis and found that RR positively affected fluency and comprehension for students with learning disabilities, with effect sizes of 0.83 and 0.67, respectively. Even after only two reads, the intervention positively impacted fluency (effect size of 0.57).

Two decades of research have guided the most effective methods for teaching most children, namely, a phonics-based approach that teaches students to identify and manipulate the sounds heard in spoken English and to connect these with the letters used to represent sounds in print. Unfortunately, the evidence base for this approach most often excluded students with ID (NRP, 2000).

Oral Reading Fluency

Oral reading fluency (ORF) is a crucial reading skill that is often neglected (Allington, 1983). It is essential because it is closely related to reading comprehension. According to the National Assessment of Educational Progress (NAEP), in 2024, the average reading score for the nation at the fourth-grade level was two points lower than in 2022 and five points lower than in 2019. NAEP scores are also reported at five selected percentiles to show the progress made by lower (10th and 25th percentiles), middle (50th percentile), and higher (75th and 90th percentiles) performing students. The 2024 scores at all selected percentiles, except the 90th percentile, were lower compared to the 2022 percentile scores. Compared to the first reading assessment in 1992, the average score in 2024 was not significantly different. At the same time, eighth-grade students performed at or above NAEP proficient on the 2024 NAEP reading assessment, which was not substantially different from 2022 but lower compared to 2019.

Fluency in reading involves swift and accurate interpretation of textual content (Burns et al., 2002). The main components of fluency include speed, expression, accuracy, and comprehension. Speed refers to reading efficiently, while expression involves expressing

emotions and breaking down long paragraphs (Elish-Piper & L’Allier, 2010). Accuracy is crucial for reading accurately, as it consists of decoding words based on letter-sound correlations and patterns. Words Correct Per Minute (WCPM) measures reading accuracy and speed (Williams et al., 2011). Comprehension teaches learners to recognize that the cognitive processes involved in reading, fluency, and understanding are interconnected. Where reading comprehension is divided into literal, inferential, and evaluative categories (Whalon et al., 2009), strategies such as story mapping, visual organizers, question generation, and summarization can aid comprehension.

The National Research Council stated that sufficient practice in reading is necessary to achieve fluency with different texts (Snow et al., 1998). In recent years, our understanding of what is involved in reading fluency has expanded beyond word recognition to include comprehension processes (Thurlow & van den Broek, 1997). Fluency requires the rapid use of punctuation and the ability to group words appropriately into meaningful grammatical units for interpretation. It also involves determining where to place emphasis or where to pause to make sense of a text (Schreiber, 1987). Readers must carry out these aspects of interpretation rapidly and usually without conscious attention. Thus, fluency helps enable reading comprehension by freeing cognitive resources for interpretation; however, it is also implicated in the comprehension process, as it necessarily includes preliminary interpretive steps (Pinnell, 1995).

Theoretical Framework

When individuals are diagnosed with an ID, the effects of these disabilities are varied considerably among people who have them, just as the range of abilities varies considerably among all people. Young children with ID may take longer to learn to speak, walk, and care for their personal needs, such as dressing or eating. The same situation occurs when they attend school; they may take longer to learn. As adults, many people with ID can lead independent lives

in the community without paid support. A small percentage will have significant, lifelong limitations in functioning. However, with early intervention, appropriate education, and support, all individuals can lead satisfying lives in the community.

Scholars have discussed theoretical frameworks that support the use of RR to enhance reading fluency among individuals with ID. It was posited that practicing reading texts multiple times improves reading speed, accuracy, and expression, bridging the gap between word recognition and comprehension. The theoretical framework suggests that frequent practice leads to automaticity, allowing readers to process words more effortlessly and freeing cognitive resources for higher-level comprehension. Applied behavior analysis, which emphasizes the importance of understanding and improving specific behaviors through systematic intervention, is particularly significant in this context. Various theoretical paradigms, including automaticity principles and Scarborough's Reading Rope perspectives, illustrate how repeated exposure to text enhances fluency, vocabulary acquisition, and overall reading comprehension.

Developmental Theories and Intellectual Disabilities

Developmental theories feed the framework for understanding how individuals with ID improve cognitively, socially, and emotionally over time. These theories emphasize the role of early intervention and education in improving outcomes and promoting independence.

Piaget's Theory of Cognitive Development (1952)

Piaget's theory outlines four stages of cognitive development. The first stage is the Sensorimotor Stage (0-2 years), in which infants learn via sensory experiences and motor activities. Children with ID might experience delays in object permanence and motor skill development. The preoperational stage (2-7 years) was characterized by symbolic thinking, but children with ID may struggle with language acquisition, problem-solving, and perspective-

taking. In the Concrete Operational Stage (7-11 years), individuals with ID may require structured support to develop reasoning skills, allowing logical thinking to emerge. Finally, in the formal Operational Stage (12+ years), abstract thinking develops, but those with ID may continue to need concrete learning strategies (Piaget, 1952).

Applying Piaget's cognitive development theory in reading fluency explains how cognitive processing develops in stages, which affects how persons with ID acquire reading fluency. Many individuals with ID function best with concrete, hands-on reading strategies (e.g., phonics-based approaches, sight words, and multisensory instruction). In the formal operational stage (12+ years), many young adults with ID may struggle with abstract reasoning, requiring explicit instruction, repeated practice, and structured decoding strategies to improve fluency.

Vygotsky's Sociocultural Theory (1978)

Vygotsky emphasized the role of social interaction, culture, and scaffolding in cognitive development. The Zone of Proximal Development (ZPD) suggests that with appropriate teacher guidance, individuals with ID can progress beyond their independent abilities. Additionally, high scaffolding, where teachers provide structured support and then gradually remove it, is particularly beneficial for students with ID in learning tasks such as reading and problem-solving. As for language and social interaction, Vygotsky argued that language development is critical for cognitive growth. It appeared that delays in speech and communication among individuals with ID can be supported through augmentative communication strategies and structured language interventions (Vygotsky, 1978).

Vygotsky emphasized the role of social interaction and scaffolding in learning, which is essential for teaching reading fluency to young adults with ID. This theory emphasizes the ZPD, where reading interventions should focus on skills that learners can achieve with scaffolded

support before transitioning to independent reading. Additionally, scaffolding techniques, which included teacher modeling, guided reading, paired reading, and the gradual removal of supports (e.g., fading prompts), align with Vygotsky's framework.

Using Scarborough's Reading Rope (2001), it is highlighted that word recognition (including phonological awareness, decoding, and sight word recognition) and language comprehension must be strengthened together for effective fluency. Using Vygotsky's scaffolding approach, educators could support students' word decoding until automaticity was achieved. Guided oral reading aligns with Vygotsky's idea that social interaction would enhance skill development.

Automaticity Theory in Reading

The definition of automaticity is the reader's ability to decode print intensity without conscious thought or effort (La Berge & Samuels, 1974). Reading comprehension is linked to automaticity, which occurs when the reader can read consciously without thinking about decoding; the reader's mind is then free to comprehend the text (Adams, 1990; NICHD, 2000). This is not the case for most children with disabilities. One element that impacts whether readers can read automatically is comprehension, which needs to be improved due to decoding difficulties (Adams, 1990; LaBerge & Samuels, 1974).

Samuels and Flor (1997) explained the connection between automaticity and the development of expertise in reading, and how teachers can implement automaticity to improve students. Teachers must focus on developing automaticity by practicing over an extended period. As students improve in accuracy, they require less time for attention; thus, automaticity increases when attention is at a minimum level. At that time, the teacher must be aware of the students who have not yet achieved the level of automaticity and are still at the accuracy level. Also,

teachers must be conscious of the type of skill or knowledge, and not all skills or knowledge must be at the same level of automaticity. Automatic readers should perform comparably in both tasks, while non-automatic readers may show better comprehension in listening. The oral expression indicates decoding fluency, with automatic readers demonstrating accuracy, speed, expression, and comprehension. Overall, a combination of indicators such as oral reading speed, accuracy, expression, and comprehension can help assess automaticity in decoding. Samuels further emphasizes the importance of practice over a long period when discussing automaticity so that students can practice and store it in memory (Samuels 1997; Samuels & Flor, 1997).

In their paper, Samuels and Flor (1997) address three features that influence the development of automaticity: (a) the type of instruction that facilitates learning, (b) practice to reach accuracy, and (c) motivation, where students maintain focus on the given task. The procedure for assessing automaticity in reading involves selecting two passages at the student's reading level, one for listening comprehension and the other for oral reading. The passages should be of equal length and difficulty. Students are instructed to recall information from both passages after listening or reading without prior practice. The teacher observes comprehension and recalls omitted details, prompting questions if necessary. The teacher records word recognition errors, reading rate, oral expression, and comprehension for oral reading. By comparing comprehension between listening and oral reading, the teacher evaluates the impact of word recognition on comprehension.

Wolf (2018) investigated the development of reading automaticity and fluency from the perspective of teachers. She used case scenarios to emphasize the four conclusions: (a) the terms automaticity and fluency are often interchanged; the concepts are not the same; (b) understanding the differences between automaticity and fluency can impact repeat reading

teaching strategies; (c) there is an assumption that rapid word recognition is the same cognitive process as automatic word decoding; and (d) there are two pathways to fluent reading, rapid word recognition, and automatic decoding ability. Therefore, Wolf presented three principles that would improve automaticity and fluency within the classroom: providing critical materials for learning, building learning to achieve the skill, and engaging in realistic practice. Teachers must consider these principles to guide their students, particularly those with disabilities, in developing reading fluency.

Scarborough's Reading Rope

Reading can be approached as a science. It involves creating hypotheses, testing them through controlled experiments or observation, and collecting empirical evidence to support or refute them (Scarborough, 2001). The human brain's phonological processor links to spoken language, the phonological assembly associates' letters with sounds, and the orthographic processor stores information. The "Simple View" and "Rope Model" are conceptual frameworks designed to help students improve their reading proficiency. The Simple View breaks down reading into two essential components: decoding and language comprehension. Decoding refers to accurately translating written symbols into sounds and words. At the same time, language comprehension involves understanding the meaning of those words and how they relate to each other in sentences and paragraphs. According to the Simple View of Reading, successful reading comprehension requires decoding and language comprehension proficiency. Students' struggles in either of these areas may hinder their comprehension (Stewart, 2019).

The Rope Model builds upon the Simple View by illustrating reading comprehension as a complex process, similar to weaving strands together to create a strong rope. Each strand represents a distinct aspect of comprehension, including decoding, vocabulary knowledge,

background knowledge, and cognitive strategies such as inference-making and summarization. Just like a rope requires all its strands to be tightly woven together for strength, adequate reading comprehension relies on integrating these various components. The Rope Model emphasizes the interconnectedness of these skills and the importance of developing each one to become a proficient reader. By understanding these models, educators can identify their students' strengths and weaknesses in reading comprehension. Teachers and researchers can also use these frameworks to create targeted instruction and interventions tailored to individual students' needs, ultimately helping them become more confident and proficient readers (Duke & Cartwright, 2021).

Applied Behavior Analysis

Applied behavior analysis (ABA) emphasizes reinforcement, behavior modification, and systematic assessment to enhance learning outcomes (Cooper et al, 2020). By applying these principles, educators can design, implement, and adjust RR programs tailored to the needs of these students, leading to a sense of accomplishment in their work. Educators can create a structured and supportive framework that enhances reading fluency, fosters motivation and engagement, and improves reading skills by integrating ABA principles into RR interventions (Shapiro, 2011).

Behavioral principles in RR include reinforcement (Morrow & Gambrell, 2011), task analysis (Hughes, 2017), and systematic assessment (Kazdin, 2019). Positive reinforcement, such as immediate praise or rewards for improved reading fluency, can motivate students to engage more consistently with the intervention. Task analysis breaks down complex tasks into manageable steps, facilitating a structured and supportive learning environment. Systematic

assessment enables continuous monitoring and data collection, facilitating adjustments based on individual progress and needs.

CHAPTER TWO READING FLUENCY: A REVIEW OF THE LITERATURE

Repeated Reading Interventions

In recent years, postsecondary education for students with ID has shifted from a primary focus on academic achievement to emphasizing instructional approaches that address the needs of students with developmental disabilities, including those with ID and ASD. This change reflects a broader understanding of the diverse needs of students with ID and highlights the importance of providing tailored support to ensure their successful participation in higher education. Researchers investigated the effectiveness of teaching academic content to this population. Looking closely at these outcomes showed that students can learn academic content in math (Browder et al., 2012), science (Hudson et al., 2014; Knight et al., 2013), social studies (Schenning et al., 2013; Zakas et al., 2013), and language arts (Mims et al., 2012) when explicit and systematic procedures are implemented.

When students make slow progress toward fluently decoding text, teachers have other ways to engage with the text, allowing instruction to focus on text comprehension. One way to support reading is to use e-text and text-to-speech to help struggling readers, alongside the opportunity to interact with text without decoding it. Furthermore, reading aloud or shared storytelling, in which a skilled reader reads the text to the student and provides opportunities for the student to participate and interact within the story, are simple and inexpensive solutions for accessing text without the ability to decode it (Hudson & Test, 2011).

Allor and his colleagues (2010) conducted a study to investigate whether reading instruction, including phonics and sight word recognition, was effective for students with ID, involving students with low Iqs. The participants were 63 elementary students, ranging from first to fourth grade. The intervention aimed to use explicit reading instruction using early

interventions in reading, focusing on phonemic awareness, phonics, fluency, vocabulary, and comprehension. The study consisted of instruction that took place in small groups, five days a week, for 40–50 minutes over two academic years. During their sessions to improve sight word recognition, students received direct, systematic reading instruction, which significantly enhanced their ability to recognize sight words compared to those in the control group who received typical school instruction. Whereas for the broader literacy gains, the treatment group outperformed the control group in decoding, phonemic awareness, and reading fluency, not just sight word recognition. While measuring the effectiveness of the IQ range, gains were evident regardless of the IQ level within the studied range. This challenged assumptions that students with ID cannot benefit from phonics-based instruction. The outcomes of this study demonstrate the potential of students with ID to learn to read when given access to systematic, evidence-based instruction. Sight word recognition should be part of a broader literacy program, not the sole method. Allor and colleagues emphasized that relying solely on whole-word or sight word methods underestimates the abilities of students with ID. Instead, combining sight word recognition with phonics and fluency training yields stronger reading outcomes.

The purpose of this literature review is to examine the published, peer-reviewed literature about the following elements: (a) the use of RR interventions to increase the reading fluency of students with learning disabilities, (b) reading fluency strategies to increase the reading fluency of students with ID; and (c) RR strategies to increase the reading fluency of students with ID. Through such a review, researchers can gain greater insight into future efforts to replicate and extend RR research for students with disabilities, especially among those with ID.

Combined Repeated Reading with Other Interventions

Repeated Reading combined with Silent Reading

Freeland et al. (2000) sought to examine the effects of using RR and silent reading to increase comprehension and rates by using a multielement design. Three students with learning disabilities were asked to read from Jamestown Publishers' Timed Reading in Literature Level 1 (Spargo, 1989). There were two conditions for reading: participants were asked to read the passage silently and raise their hands when finished. The experimenter recorded the time, and participants answered comprehension questions about the text they had read. In the second condition, participants were asked to read the same passage aloud two times, and the experimenter would follow up with them and provide corrections. Results demonstrated an increase in silent reading comprehension rates, which encouraged the use of the measurement to evaluate students' reading skills directly. As for the RR, their findings showed increased rates of accurate oral rereading and silent reading comprehension among students. Freeland and his colleagues encouraged future research to investigate the relationship between a common measure of reading fluency—words correct per minute—and silent reading comprehension rates.

The Use of Repeat'd Reading Combined with Word Boxes Phonics

In a 2004 study, Devault and Joseph examined the effectiveness of combining two strategies for improving reading fluency and comprehension. Their participants were three high school students with severe reading disabilities. The researchers used RR connected with word boxes to enhance reading skills. The word boxes technique contains a rectangle that is divided into sections, corresponding to the number of sounds in a word. Magnetic or tile letters were placed below the divided boxes, and children slide the letters into the respective sections of the rectangle as they articulate each sound. This method has proven effective in helping first graders

and elementary students with disabilities develop phonemic awareness, word identification, and spelling skills. The participants' Iqs ranged between 57 and 94, and their reading levels were between first and second grade. For the intervention, the researchers employed direct instruction for approximately 15 to 26 minutes over five consecutive days. The participant was given one minute to read the passage. At the same time, the instructor wrote the words the participant had misread and provided them with an index card to read the correct words. As a result of RR combined with word boxes, the students increased their reading fluency levels. In future research, Devault and Joseph (2004) suggested improving reading by combining RR with other interventions.

Using Repeated Combined with Question Generation Intervention

In 2008, Therrien and Budin conducted a study to investigate the impact of the Reread-Adapt and Answer-Comprehend (RAAC) intervention on the reading achievement of students who are at risk or classified with an SLD in reading. The study employed a two-level treatment, single factor/post-experimental design, where special education teachers delivered intervention sessions. The results showed that students involved in the RAAC intervention significantly improved their reading fluency on passages that were reread. In an average of 2.4 readings, students were able to meet the set criterion for their instructional level, resulting in a decrease in the time needed to read the passages (an average reduction of 22.16 seconds).

Hua and colleagues (2012) examined the Reread-Adapt and Answer-Comprehend (RAAC) to assess its effectiveness as an intervention for reading fluency and comprehension using a multiple-baseline across-subjects design of three students diagnosed with mild ID and severe learning disabilities. The RAAC intervention involved the tutor providing questions, asking the students to read them, and then reading the text three times. When the students

misread the word, the tutor would read the word using an explicit teaching procedure. After the student had read the third reading, the tutor would ask the student to answer the questions provided at the beginning of the session. If needed, when the student could not answer the question, the tutor provided prompts in the following order: asked the student, “Could you find the answer in the passage?”; directed the student to read where the sentence had the answer, and the tutor answered the question for the student. All three participants demonstrated growth in oral reading by repeating the same passage three times, indicating that all students benefited from the systematic and intensive instruction provided through the RAAC intervention.

Along with improving fluency, the students’ comprehension skills improved. For Hua and colleagues, the results of this study provide important implications for teachers teaching reading to students with disabilities. One implication is that student reading fluency can improve by having them repeatedly read the same passage while providing feedback to the learners. Another implication is that asking questions and discussing the text while reading can improve reading comprehension for these students.

With a growing body of research based on academic intervention for postsecondary learners with ID, Hua and colleagues (2018) examined the effectiveness of using the RAAC and goal-setting intervention on ORF and reading comprehension in five young adults with ID. These young adults enrolled in an IPSE program designed to integrate collegiate experience in the following areas: academic enhancement, career development, student life, and community life. They used the AIMS web passages to assess participants’ ORF and reading comprehension as dependent measures of the study. Their reading level was determined by calculating the instructional reading level of each student using a curriculum-based measurement (CBM). They did not find a relationship between the ORF and the RAAC. Elements that might impact these

results include the number of sessions (between 5 and 14 sessions). Session numbers were lower compared to other studies conducted by Allor and colleagues, which required between 15 and 20 weeks of daily intervention to achieve the same level of improvement in reading areas. RR interventions may benefit students who have already acquired decoding skills.

Repeated Reading with Error Correction

RR with error correction is a commonly employed instructional strategy to enhance the reading fluency skills of students with mild disabilities (Stevens et al., 2017). Error correction methods, such as systematic error correction, offered feedback on reading errors when the reader cannot self-correct (Rose, 1984). Using the error involves administering error correction during and after the initial reading, providing immediate correction during reading, and reviewing all reading errors. Research indicates that RR with systematic error correction (SEC) has shown promise in improving fluency and reading comprehension skills among elementary and middle school students with learning disabilities and other disabilities, such as second-grade students with specific learning disabilities, attention-deficit/hyperactivity disorder, and emotional and behavioral disorders (Alber-Morgan et al., 2007; Nelson et al., 2004). However, studies examining the effectiveness of RR with systematic error correction specifically for students with ID are currently limited.

In 2007, Alber-Morgan and her colleagues conducted a study utilizing a multiple-baseline- across- students design to investigate the impact of a combined intervention consisting of RRs, systematic error correction, and performance feedback on the reading fluency and comprehension of four middle school students (two with emotional and behavior disorders and two with learning disabilities), who were attending an outpatient day treatment program for

behavior problems. They utilized the Analytical Reading Inventory by Woods and Moe (2007) to assess reading levels, with a focus on oral reading and reading comprehension skills.

During the baseline phase, researchers presented a reading passage to each student and prompted them to read it aloud. The intervention phase included the RRs procedure, incorporating systematic error correction as described by Nelson et al. (2004), and performance feedback, such as the approach by Chafouleas et al. (2004). Specifically, systematic error correction involved the data collector presenting the reading passage and instructing the student to read the story. As the student read, the data collector documented each word as either accurate or erroneous. Upon each occurrence of a reading error by the student, the subsequent error correcting procedure was implemented: The data collector accurately articulated the word, encouraged the student to reiterate it, and offered praise upon the student's correctness.

After finishing the passage (about 5–7 minutes), the data collector examined each reading error by indicating the word and asking, "What is this word?" Upon the student's accurate response, the data collector sent a commendatory message. When the student responded incorrectly or was unfamiliar with the word, the data collector articulated the word, encouraged the student to repeat it, and provided a commendatory response. The student was asked to read as many words as possible within a one-minute time frame. For performance feedback, the data collector counted the correct words after the 1-minute timed reading and told the student the number. The data collector advised the students to beat their initial word per minute result on the second timed reading. Students were praised when they read more words per minute on the second timed reading, which was always the case. The data collector would then compare the current session's end reading rate to the prior session. Praise was given if the reading pace improved (e.g., "Your fastest reading yesterday was 89 words per minute, but today you read 98!

Nine additional words. Good job”). The teacher advised the student to try harder next time if the reading rate did not increase. In a third phase of the study, researchers introduced an additional intervention component, RR plus prediction, where students were asked to read the title, predict the content, modify their prediction after reading the first two sentences, and then read the entire passage.

The results revealed a functional relation between RRs with error correction and performance feedback, leading to increased reading fluency for three out of four students and decreased word-reading errors for all four. Moreover, all students demonstrated improvements in both literal and inferential reading comprehension. However, the effects of the prediction component were inconclusive. In sum, the results of this study provide further evidence for the use of RR combined with error correction and performance feedback to enhance reading performance quickly (Alber-Morgan et al., 2007).

Repeated Reading Using Technology

Alqahtani’s RR study (2020), which utilized an iPad as a promising tool for supporting the academic skills of students with disabilities, particularly young adults with ID, holds significant implications. These students often need help gaining or retaining employment due to their lack of functional reading skills. By enhancing their functional reading abilities, these students can better comprehend text and master reading. Alqahtani’s use of a single-subject design to compare RR and iPad text-to-speech techniques for three young adults with ID yielded noteworthy results. The study found that two participants improved their reading comprehension in both conditions, with no significant difference between them. However, the use of iPads allowed these students to access text almost one-third of the time, a task that was required for

RR. This led Alqahtani to conclude that iPads are effective tools for supporting the academic skills of students with ID.

Gaps in Reading Fluency Research

Reading is an important skill for success in life; moreover, individuals with ID face unique challenges in their reading. Employment opportunities for individuals with disabilities are closely linked to positive outcomes regarding their ability to work and fulfill their responsibilities (Zafft et al., 2004). Furthermore, in 2002, Weinkauff found that three post-secondary education programs demonstrated a substantial impact on students' work skills, self-esteem, academic performance, and self-determination skills. Additionally, improvements in social problem-solving skills, independent living skills, daily living skills, and self-advocacy skills seem to contribute to a better quality of life in adulthood. More recently, Hendrickson et al. (2013) found that first-year students with ID exhibited similar levels of growth in psychological well-being, encompassing self-acceptance, personal development, purpose in life, positive relationships with others, environmental mastery, and independence, as first-year students without disabilities.

Most reading research conducted was done for students with ID who were considered using sight words or reading fluency along with reading comprehension or paired with another intervention, or as part of an instructional package for students with ID (Allor et al., 2010; Allor et al., 2014; Devault & Joseph, 2004; Hua et al., 2012; Hua et al., 2018; Mefferd & Pettegrew, 1997; Musti-Rao et al., 2009; Valleley & Shriver, 2003; Wexler et al., 2010). More importantly, these studies focused on elementary school students. By the time students enter postsecondary education, they are more focused on developing adaptive behaviors, securing employment, achieving independence, and maintaining a healthy lifestyle. Strickland et al. (2020) in their

study replicated a previous study by Alber-Morgan et al. (2007) to investigate the effectiveness of RR with systematic error correction procedures in improving reading fluency and comprehension skills in elementary students with mild ID and comorbid disorders. The intervention involved reading aloud and receiving systematic error correction, followed by oral readings and comprehension questions. Results showed no consistent gains in comprehension skills. However, further research is needed to thoroughly examine the effects of using repeated readings on increasing reading fluency outcomes for students with ID.

Postsecondary programs often require students to read and understand complex texts, follow detailed instructions, and engage with challenging academic content. These tasks can be difficult for students with ID due to deficits in reading fluency, comprehension, or vocabulary. Without targeted interventions, these students may struggle to keep up with their coursework, which can negatively impact their academic success and sense of independence. Looking closely at the results of the increase in reading intervention in postsecondary education for adults with ID, the interventions were limited to computer-based teaching of sight words (Wright et al., 2021). This study is a great example of research focusing on reading interventions for postsecondary students with ID. It highlights the importance of individualized approaches to sight-word acquisition and suggests that self-determined pacing may be the most effective strategy for improving learning speed.

Reading interventions can help students develop the skills they need to engage with this material and participate fully in the curriculum. By improving their reading and comprehension skills, students can complete assignments, study for exams, and engage more effectively in academic discussions. With the right support, students with ID can make significant progress in their reading skills, boosting their self-esteem and motivation. As they become more fluent

readers, they are likely to feel more capable and empowered to tackle new academic and personal challenges.

Purpose of the Study

For students with ID, developing reading fluency is essential, and RR offers a structured, evidence-based path to achieving it. The use of RR to examine the relation between a research-based treatment program, which involves implementing RR as systematic instruction, and the increase in reading fluency skills of postsecondary students with ID. This research sought to contribute to educators' understanding of evidence-based practices that can support the literacy development of students with ID. Strickland et al. (2020) replicated a study by Allor et al. (2007), which aimed to investigate the effectiveness of RR and error correction in improving the reading fluency and comprehension abilities of elementary-age pupils with ID. As of the latest data, May 2024, Think College reports an impressive 336 postsecondary programs in the United States for students with ID. These programs, including 202 four-year programs and 114 other two-year programs at community colleges, significantly increase postsecondary opportunities. They not only support students with ID academically but also in their life skills achievements, showcasing their potential and success in these inclusive environments.

Recognizing that reading fluency is a critical component of overall literacy development, this research aims to explore how structured RR intervention can increase reading fluency. By focusing on postsecondary learners, this study aimed to address the unique challenges they encounter in academic settings, where literacy skills are crucial for success in both academic and social contexts. Through the systematic implementation of RR, the study will evaluate its impact on fluency rates and overall reading confidence. The findings will contribute to a deeper understanding of effective instructional strategies for students with ID, guiding

educators and program developers in creating inclusive educational environments that prioritize the development of essential literacy skills. Ultimately, this research aspires to empower postsecondary students with ID, equipping them with the reading fluency necessary to thrive in their collegiate journey and beyond.

This study sought to explore the transformative effects of a repeated reading intervention on the oral reading fluency of post-secondary students with ID. Mastering oral reading fluency is crucial, as it forms the foundation for comprehensive literacy skills that enable effective communication and foster independence. Reading is not merely an academic skill; it is an essential tool for navigating everyday life from securing employment to engaging with the community and achieving independent living. By improving reading fluency, educators have the opportunity to significantly elevate students' functional literacy and enhance their quality of life. Through the strategic use of RR methods, this research aims not only to boost academic achievement but also to empower students to live independently and participate fully and meaningfully in society.

Research Questions

1. What are the effects of implementing a repeated reading (RR) intervention on the oral reading fluency of post-secondary students with ID?
2. How do postsecondary students with ID perceive the use and effectiveness of the repeated reading intervention?

CHAPTER THREE USING REPEATED READING TO INCREASE READING FLUENCY AMONG POSTSECONDARY STUDENTS WITH ID

Method and Materials

Participants

Four postsecondary students, two male and two female with ID, participated in the study. These participants were selected based on their ability to read aloud and their willingness to contribute to the study, as well as other inclusion criteria. At the time of the study, all four participants were enrolled in a postsecondary program designed for young adults with ID at a large university. This two-year program assists adults with ID in transitioning from high school to adult life. Students receive daily support from staff and same-aged peer mentors throughout their time in the program, including in classes, navigating the campus, and developing daily living skills. Peer mentors also work to support students in continuing to develop social and academic skills by providing support that helps build independence in college students' daily activities.

Upon receiving a signed informed consent form (See Appendix A), all four learners met the following criteria to be participants in the study: a) young adult student who attended postsecondary education program; b) able to follow multiple-step oral direction; c) use oral communication as their primary means of communication; d) able to maintain attention to a task with no more than three prompts during at least 15-min; e) able to sit in a seat or stand in the same place next to the table for at least 15-min; f) able to comprehend information presented orally; g) able to read at least 50 CWPM; and h) referred by the program academic coordinator based on their knowledge of the students' abilities, and specific literacy skills in their respective domains. The eligibility criteria were designed to help identify participants who could engage in

the study procedures. Additional criteria included possessing sustained attention, having the necessary third-grade reading skills, and being able to complete the dependent variable probe, which required participants to express their reading strategies verbally through an oral think-aloud method. The program coordinator, serving as a primary informant for the researcher, emphasized the participant's information. Table 1 provides information about the participants. This information included the student's name, age, gender, race, type of disability, IQ, year of program attendance, and reading level.

Max was a 20-year-old African American male in his second year of the program at the time of the study. He had a diagnosis of ID and Autism Spectrum Disorder (ASD). He lived with his family. According to his program coordinator, he demonstrated strength in diligence, consistently keeping up with his work and striving for achievement. He preferred to complete assessments independently and exhibited a high level of independence; however, he faced challenges in forming meaningful social relationships.

Leo was a 22-year-old, white male in his third year of the program at the time of the study. He has diagnoses with ID, ASD, and other health impairments. He lived in the university dorm. According to his program coordinator, he demonstrated strength in being kind, capable, and possessing strong academic, vocational, and social skills due to his reciprocity and flexibility. He was hardworking, and he faced challenges in finding novelty and new experiences.

Mia was a 23-year-old, white female in her third year of the program at the time of the study. She had a diagnosis with ID, speech, language, and learning disabilities. She lived with her family. According to her program coordinator, she demonstrated strengths in strong academic and vocational abilities, and her job site requested her. Her level of assertiveness

Table 1. Characteristics of the Participants.

Participant	Age	Gender	Race/ Ethnicity	Diagnosis	IQ Test	Year Attending	Brigance Assessment
Max	20	M	African American	ID+ASD	75	2022/Third year	6 th
Leo	22	M	White	ID+ ASD+	NA	2022/Third year	3ed
Mia	23	F	White	ID+LD+ Speech impairments	NA	2022/Third year	4 th
Eva	24	F	White	ID +ASD+CP+	60	2023/Second year	4 th

Note: F = Female; M = Male, ID = Intellectual Disabilities, ASD = Autism Spectrum Disorder, LD: Learning Disability; OHI= Other Health Impairment.

varies depending on the context. However, she faced challenges related to engagement due to a lack of interest and difficulties in forming long-term peer connections.

Eva was a 24-year-old, white female in her third year of the program at the time of the study. She had diagnoses of ID, ASD, cerebral palsy, and other health impairments. She lived off campus. According to her program coordinator, Eva demonstrated strengths in both academic and vocational areas, particularly when motivated by the presence of an authority figure or a peer she aimed to impress. She also exhibited strong skills in animal care, reflecting her interest and competence in that area. However, she faced challenges with attention-seeking behaviors that disrupted her and others, exhibited avoidance and resistance toward undesired tasks, and experienced difficulties with social reciprocity.

Setting

This study took place in a small office on the campus of a large university in the Southeastern United States. All sessions were one-on-one and led by the researcher. Participants completed the eligibility session in person on their campus, which took place in a small special education library. Each session is conducted in a small, quiet office, with the student and researcher sitting at the office table. The university served approximately 39,000 students, of whom the majority were predominantly white (77%), followed by Hispanic or Latino (5.63%), Black or African American (4.7%), two or more races (4.42%), and Asian (3.51%). The IPSE program within the university was designed to provide young adults with disabilities access to college experiences. Students enrolled in the program take college courses along with their peers in areas of interest, in addition to coursework focused on daily living, social, and life skills. Students also work on vocational skill development in internship programming, partnering with community and on-campus organizations. Upon successful completion of the program, students earn a vocational certificate. Participants received support from peer mentors who assisted them with physical access to facilities when needed, helped with classes, and aided with skill development. The researcher served as the interventionist and primary data collector, while the research assistants conducted inter-observer agreement and procedural reliability checks throughout the study.

Materials

To ensure the reading passages were appropriately matched with the participants' reading levels, the researcher used a reliable and validated reading assessment. Before the study began, the students' oral reading fluency (ORF) was determined using the Brigance Assessment Comprehensive Inventory of Basic Skills II (2010) as a pre-study reading assessment for each

participant. The researcher independently administered the oral reading section of the Brigance, a tool with 18 sections to measure basic academic skills, known for its reliability and validity. The use of oral reading to determine the highest grade level, where students read the passage with 97% accuracy in pronouncing the words, and to select appropriate passages that fit their reading level across participants, further validated the research process. The Brigance assessment protocol recommended using text one level below the participants' grade level. The reading was timed from the moment the student started reading, and if the student could not read a word, the researcher would wait for three seconds and then read the word. The researcher calculated the number of words per minute by dividing the number of words read in 60 seconds by the time it took the student to read. The participants' instructional level was established based on the study inclusion criteria, which was 50 WCPM. However, using the Brigance assessment in this research, the participants' reading levels ranged from 56 to 90 WCPM (Brigance assessment reading grade levels are presented for each participant in Table 1), a result that further validates the use of the Brigance assessment tool.

The researcher selected 25 passages from the Common Lit website (2024), which were between the third and fourth grade levels and ranged in length from 190 to 900 words. Students read passages during the baseline-level, intervention, and maintenance sessions. The passages were assigned randomly to the students. Common Lit is a free educational website with a user-friendly layout that offers students and teachers high-quality reading materials and free tools. The website features several key elements, including text collections and a diverse library of reading passages organized by grade level, style, and theme. The website provides guidance, including a teacher overview, definitions, open-ended questions, assessment questions, and discussion prompts (see Appendix K for the list of passages used during baseline, intervention,

and mid-sentence sessions). The researcher used different passages for each participant across the baseline, intervention, and maintenance sessions.

Reading passages were selected randomly for each phase of the study; however, students read the same passage for each session. Each session, three copies of the reading passage were used: a) the student version that contained (in Arial font size 14) the title, the author, passage, and a picture about the passage (see Appendix B), b) the researcher's version than contained the passage text with word counts per line, and c) was accompanied by a data sheet (see Appendix C). This data sheet included fields for the student's name, session number, time, number of words read during each reading, and space for observational notes. During each session, the researcher instructed the student to read the passage aloud.

Researchers increasingly rely on digital tools such as Microsoft Word's readability statistics to guide text selection and modification. These tools play a crucial role in ensuring that reading materials are appropriately matched to students' reading levels. Reading readability in Microsoft Word refers to the ease with which a reader can understand a written text. The software includes tools that help analyze and improve the readability of text, which was used in this study. The researcher used the following key features to determine the reading passages, which should be at a level between third and sixth grade (see Appendix C for a screenshot from one of the passages). After performing a spell check in Microsoft Word, you can access readability statistics, which include scores like the Flesch Reading Ease and the Flesch-Kincaid Grade Level. In each session, students received both verbal reinforcement (e.g., "great job") and physical reinforcement, such as stickers or candies, to encourage students' performance throughout the entire study.

Research Design

A multiple-probe across participants, which is a variant of the multiple baseline design (MBL) first explored by Horner and Baer (1978), was used to assess the effectiveness of the RR intervention on reading fluency among four post-secondary students with ID. This design allows the intervention to be introduced in a staggered manner across participants, thereby enhancing the ability to demonstrate a functional relationship between the intervention and behavioral changes (Horner & Baer, 1978; Gast & Ledford, 2014). The multiple-probe design offers flexibility for both researchers and participants, addressing many frustrations often associated with extended baseline studies where target behaviors are not part of the learner's current capabilities (Morgan & Morgan, 2009). Additionally, by collecting baseline data intermittently instead of continuously, this design reduces participant fatigue and minimizes the potential for reactive measurement (Gast & Ledford, 2014). Using the MBL design is particularly valuable in fluency research, as it allows researchers to isolate the effects of RR on outcomes, WCPM (NRP, 2000). This design is not only adaptable but also rigorous in assessing threats to internal validity, providing a practical method for practitioners and researchers to evaluate the effectiveness of interventions on dependent variables (Gast et al., 2018).

Experimental control is demonstrated in this research design when both the level and trend of the dependent variable remain stable during the baseline phase, followed by an immediate change upon the introduction of the intervention. The effectiveness of the intervention is shown when it leads to a significant change in behavior while the baseline levels remain stable. Furthermore, this design is ethically sound, as it avoids withdrawing an effective intervention, which can cause frustration for participants (Gast et al., 2018).

The intervention consisted of RR to increase reading fluency, using reading passages selected to align with participants' instructional level, which was from third to fifth reading grades (see Table 1). The study consisted of three phases: baseline, intervention, and maintenance. Reading fluency was assessed by measuring the correct words per minute for each participant across all stages. The study duration was approximately four weeks, with each student session occurring daily, five days a week. A minimum of five probes were conducted during the baseline phase (Cooper et al., 2007), before the introduction of the intervention. Baseline probes were administered until the correct words per minute baseline data were stable (i.e., 80% of data values within $\pm 20\%$ of the mean) or exhibited a downward trend for at least three consecutive sessions prior to the intervention. Students continued in the baseline phase until the previous student demonstrated improvements of two to three successive correct words per minute during the intervention.

Dependent Variables

The dependent variable in the study was oral reading fluency (ORF), measured as the number of correct words per minute (CWPM) while students independently read assigned reading passages (one reading score per session) across all sessions and phases of the study. A word was considered correct if the student pronounced it accurately within three seconds. It would be regarded as accurate if the student initially pronounced it incorrectly but then made an independent correction within 3 seconds of reading the previous word (Alber-Morgan et al., 2007). Self-correction, word repetition, insertion, and dialect variances were not considered mistakes if they occurred within three seconds (Shinn & Shinn, 2002). Words that were not counted as correct were considered errors.

Data Collection Procedures

The Oral Reading subtest, which aligns with grade-level benchmarks, was utilized to determine the participants' instructional reading levels and fluency skills. To ensure that the reading passage was suitable for the students' reading levels, the researcher employed the Brigance Comprehensive Inventory of Basic Skills II. The reading levels of the participants were as follows: Max was in the 6th grade, Leo was in the 4th grade, and Mia and Eva were in the 5th grade. The results confirmed that all participants were reading at a level between the fourth and sixth grade levels, which guided the selection of appropriate instructional passages for the intervention.

At the beginning of each session, participants were given their assigned reading passage and asked to read it aloud. The researcher set a stopwatch for 1 min and prompted the participant to start reading. Data were collected only for the first minute of reading, and the highest count of CWPM was used for comparison. For instance, if a student read 103 words correctly on the first reading and 89 on the second, the researcher would use the first reading for analysis. While the student read the passage, the researcher listened for correctly pronounced words to evaluate if the student could pronounce them without assistance. A word was counted as correct if it was pronounced accurately within three seconds (Alber-Morgan et al., 2007). The researcher utilized two types of data sheets: one for individual session tracking (see Appendix D) and another to compile data after each session, summarizing the overall progress of the four participants (see Appendix G) to record their performance during the one-minute reading. A bracket (]) was placed at the last word read when the minute ended, and a slash (/) marked any incorrect words. At the end of the one-minute reading, the researcher instructed the student to stop reading. The number of CWPM for each reading was calculated and recorded during the individual sessions.

These metrics were exclusively documented for this time frame and were used for the graphed data.

Baseline

During the baseline sessions, the researcher followed several steps with the students (refer to Appendix E for a detailed list of these steps). First, the researcher presented a passage for the students to read aloud. Second, the researcher started a stopwatch as soon as the student read the first word. Third, the researcher followed along with the student using her own copy of the passage. If the student misread a word, the researcher marked it with a slash (/) on her copy. If the student hesitated or failed to read a word within three seconds, the researcher noted it as an error on her copy. Fourth, at the end of the first minute, the researcher placed a mark (|) in her copy to indicate where the student stopped reading. Fifth, she instructed the student to continue reading the passage. Finally, when the student finished reading the entire passage, they received verbal praise and physical rewards, such as a sticker or a piece of candy. However, the researcher refrained from providing feedback on their reading fluency skills, which may have affected their learning. After each session, the researcher counted and recorded the CWPM in an individual data sheet, then compiled the information into a gathering data sheet. The researcher used different passages for each participant throughout the baseline sessions.

Independent Variable

The independent variable (IV) was the use of the RR intervention in reading. During RR, learners repeatedly read the passage until they reach a predetermined level of oral reading fluency. This method, which requires students to read portions of the text (for example, 50–200 words) aloud until they meet the success criteria with and without the teacher, has shown remarkable results (Samuels, 1979). In this study, the RR intervention was implemented with

each student individually (one-on-one with the researcher) during approximately 15- to 20-minute sessions, five times a week (See Appendix E for the intervention steps).

The RR intervention in this study included explicit instruction. This approach involves a systematic sequence of reviewing previous material, teaching new content, modeling, and providing guided and independent practice, which is repetitive and offers several opportunities to respond (Rupley et al., 2009). Explicit instruction is also helpful for teaching comprehension strategies, such as making inferences, monitoring text, and understanding text structure (Gersten et al., 2001). During the RR intervention session and before each reading, the researcher would explain the purpose of RR, discuss vocabulary, phrases, or sentences that may be challenging, reflect on student progress after each reading, and give constructive feedback and praise for improvements. In the procedures, the reader can find the details about how explicit instruction was used during the intervention sessions.

Intervention

During the intervention sessions, the researcher implemented the RR steps developed by the researcher and her advisors (refer to Appendix F for a detailed list of these steps). All sessions were conducted in a small office located in the same hallway as the main office of the postsecondary program. The time of day for sessions was established by coordinating schedules with the participants to accommodate their work, class, or other personally scheduled events. A second observer participated in person during approximately 25% of the baseline and intervention sessions to assess interobserver agreement and monitor implementation fidelity. The student would read the same passage twice, and each session would follow the procedure.

After the students finished reading the passage for the first time, the researcher would follow these steps for error correction. First, the researcher would give the student a chance to

self-correct for three seconds. If the student does not correct their error, the researcher would take one of the following actions: they would clearly state the correct word, saying, "The word is....," and then ask the student to repeat it. The researcher would also encourage the participants by saying, "Nice try—let's keep going!"

First Reading

First, at the beginning of each first reading, the researcher would place the passage in front of the students and then inform them that the reading would be conducted twice. Second, the researcher would want the students' curiosity lead their learning so she provided the following information about the passage: a) asked about what the picture is about, the location in the picture, b) provided the main characters on the passage and the passages' setting, c) provided the theme of the passage, d) informed the students what the passage was about, and e) asked the students if they had questions or information or similar experience as the meaning of the passage. In the third step, the researcher instructed the participants to read aloud for one minute, stopping when they heard an alarm signaling the end of the time. This method allowed the researcher to assess how many words the participants read per minute. Participants were informed that if they encountered any words they couldn't read, the researcher would assist them within three seconds. Next, the researcher presented the passage and started the timer as the participant began reading the first word, encouraging them to give their best effort. During the reading, the researcher marked any miscues on their copy of the passage using the (/) symbol next to the affected words. When the timer sounded, the researcher instructed the student to stop reading and indicated where they had paused in the passage with a (|) on their copy. Afterward, the researcher encouraged the student to complete reading the entire passage. In this phase, the researcher would: a) calculated the WCPM for the students first reading; b) provided verbal

reinforcement by praising their efforts and correcting mistakes; c) reread any mispronounced words; d) clarified any aspects of the story if needed; e) guided the student towards reading more fluently whenever they hesitated; and f) informed the participants of their WCPM for the first reading. To enhance engagement, the researcher reminded the students about the setting, characters, and key events of the passage, discussing the beginning, middle, and end. If applicable, they asked if the learners had experienced similar events to those in the story. Finally, once the student completed the entire passage, they moved on to the second reading procedure.

Second Reading

First, the researcher instructed the students to begin the second reading following the same guidelines as the first reading. The researcher encouraged the students to do their best, explaining that their reading would improve in terms of speed and accuracy. Second, as the student read the first word, the researcher started the timer and followed along with the same pressures in the first reading. Third, after one minute of reading, the researcher (a) counted the number of words read; (b) provided encouragement; (c) helped with any mispronounced words; and (d) informed the participants how many WCPM they read for the second reading and compared it to the first reading discussed, which reading was faster. At the end of the reading, the researcher praised the student's effort, saying, "Thank you, [name of student]! That was excellent reading today. We'll work together again tomorrow with a new passage! Now, let's get your reward for your hard work today. You can go enjoy the rest of your day!"

Finally, the researcher would check her data (the student's name, the time the session ended, the date, and any notes about the session). If the students demonstrated three consecutive successful improvements by reaching the criterion in CWPM during the final passage reading, they entered the maintenance phase.

Maintenance

After the intervention sessions were completed, the maintenance phase commenced five school days later. This phase was designed to measure the success of the RR intervention in increasing fluency for postsecondary students with ID. The students read the reading probes sequentially, as in the baseline phase. This phase continued for three sessions for each participant. For instance, when the first participant began the maintenance phase, the other participants were still in the intervention phase. The researcher provided the participants with new reading passages for one minute, with no feedback.

Interobserver Agreement

During the data collection process, the researcher received support from research advisors (RAs) to ensure the accuracy of the interobserver agreement (IOA) data throughout various phases. Probes were randomly selected and conducted weekly, with each condition being tested at least once for all participants. The researcher and RAs compared point-by-point agreements to calculate the IOA, which established the reliability of the data related to reading fluency. The observers included the research advisor and the co-advisor. The RAs had extensive experience working with students with ID and were skilled in collecting data on student behaviors. The researcher and her advisors were trained in the data collection procedures, and the researcher was responsible for data collection during all sessions. The data collection was conducted using separate data sheets that tracked each step of both the baseline and intervention phases. After each session, the researcher recorded the data and compared each task analysis step with the observer's evaluation to assess interobserver agreement (IOA). Any discrepancies identified between the observers were documented on the main data sheets, along with an annotation that indicated each participant's percentage of task completion at the point of disagreement. In cases

of dispute, the researcher's recorded data were deemed the final data points, regardless of whether the percentages were higher or lower than those of the observers.

Social Validity

The researcher performed one-on-one interviews with the students to examine their attitudes and perspectives regarding using RR instruction following the study's conclusion (see Appendix I). The following four questions were asked: (a) Do you think RR affects your reading skills? (b) What aspects of the RR activity did you find enjoyable?; (c) Did the RR activity help you remember the text?; and (d) Would you consider using the RR in the context of social studies, science, or when reading your e-books?

Treatment Integrity

Treatment integrity data were gathered using the researcher fidelity checklist for both the baseline and intervention phases (refer to checklists in Appendix G and H). The researcher actively implemented each phase and its corresponding tasks, ensuring that the interventions were free from influence by controllable external factors. A dedicated research observer was responsible for collecting treatment integrity data for approximately 25% of the intervention sessions. The observer used a printed copy of the fidelity checklist to document treatment integrity data during each session meticulously. The researcher supervised all phases of the study, with the observer present during the training sessions. Treatment integrity was calculated by dividing the number of observed instructor (researcher) behaviors by the number of anticipated instructor behaviors, with the result multiplied by 100 (Billingsley et. al., 1980)

CHAPTER FOUR RESULTS AND DISCUSSION

Results

The current study aimed to investigate the effectiveness of the RR as a reading intervention on ORF in post-secondary learners with ID. WCPM was used to measure the impact of RR intervention on reading fluency. Each participant demonstrated different levels of reading fluency performance during the baseline. Visual analysis of all data was conducted to determine the effects of the RR intervention on increasing reading fluency. PND was reported for each participant. This study's findings suggest that the RR intervention's effects on reading fluency were not substantial or consistent across participants. While some minor improvements were observed, the overall impact of the intervention was modest at best, and in some cases, it was ineffective.

Table 2 displays the study sessions of each participant across all three phases. Every participant began in the baseline phase, continuing until the researcher observed that the first participant's performance was stable for at least three consecutive data points. At that point, they progressed to the intervention phase consecutively. The second participant received the RR intervention. The third participant stayed on the baseline. The RR intervention transitioned to the third person after the second individual was successful. The researcher used the WCPM data sheets (see Appendix D) and the WCPM progress graphs (see Appendix G) to gather the data. The baseline and maintenance phase sessions lasted approximately seven to ten minutes, while the intervention sessions lasted between 15 and 20 minutes. **Table 3** shows CWPM's range, mean, and median for participants. For the graphed, the researcher would only score the highest WCPM per minute. Figure 1 illustrates the participants' names, the number of sessions attended, the phase name (baseline, RR intervention, and maintenance), and the WCPMs recorded for each

Table 2. The Participants' Number of Sessions for Each Phase

Participants	Baseline	Intervention	Maintenance
Max	6	13	3
Leo	8	12	3
Mia	8	10	3
Eva	7	10	3

Table 3. WCPM's Range, Mean, and Median for Participants

Participants	Word Correct Per Minute (WCPM)								
	Baseline			Intervention			Maintenance		
	Range	Mean	Median	Range	Mean	Median	Range	Mean	Median
Max	38	176	170	48	171.7	173.5	13	158	156
Leo	37	66	61	30	75	76	11	65	64
Mia	58	104	105	27	118	119	18	108	114
Eva	42	109	110	62	121	109	15	119	123

participant in each session. Appendix K presented the passages and results for the WCPM performance across the three phases (baseline, intervention, and maintenance). Additionally, Appendix L showed the passage titles and errors per minute, the percentage of the error during intervention sessions for each participant.

To analyze the first question the researcher used visual analysis of graphed data to examine the effects of the RR intervention (see Figure 1). Additionally, the researcher employed the Percentage of Non-Overlapping Data (PND) as a quantitative measure of intervention effectiveness. PND was calculated by identifying the proportion of data points during the intervention phase that exceeded the highest baseline point for each participant. The researcher employed the PND, a measure commonly used in single-subject research designs (SSR) (Scruggs & Mastropieri, 1998). PND provides a straightforward method for visually and quantitatively evaluating the effectiveness of interventions. Its visual interpretability makes PND particularly useful in research involving learners with disabilities, including those with ID, ASD, and LD (Kratochwill et al., 2010). It has been widely applied in studies investigating academic interventions, for example, RR, direct instruction, and social skills training. Its appeal lies in the straightforward calculation and the ability to support visual analysis of graphed data, a key aspect of SSD methodology (Horner et al., 2005). To calculate the result, the PND used the number of intervention data points beyond the baseline extreme divided by the total number of intervention data points and multiplied by 100. The results would be expressed in percentages, falling into four categories: highly effective, moderately effective, questionably effective, and ineffective (Scruggs & Mastropieri, 1998).

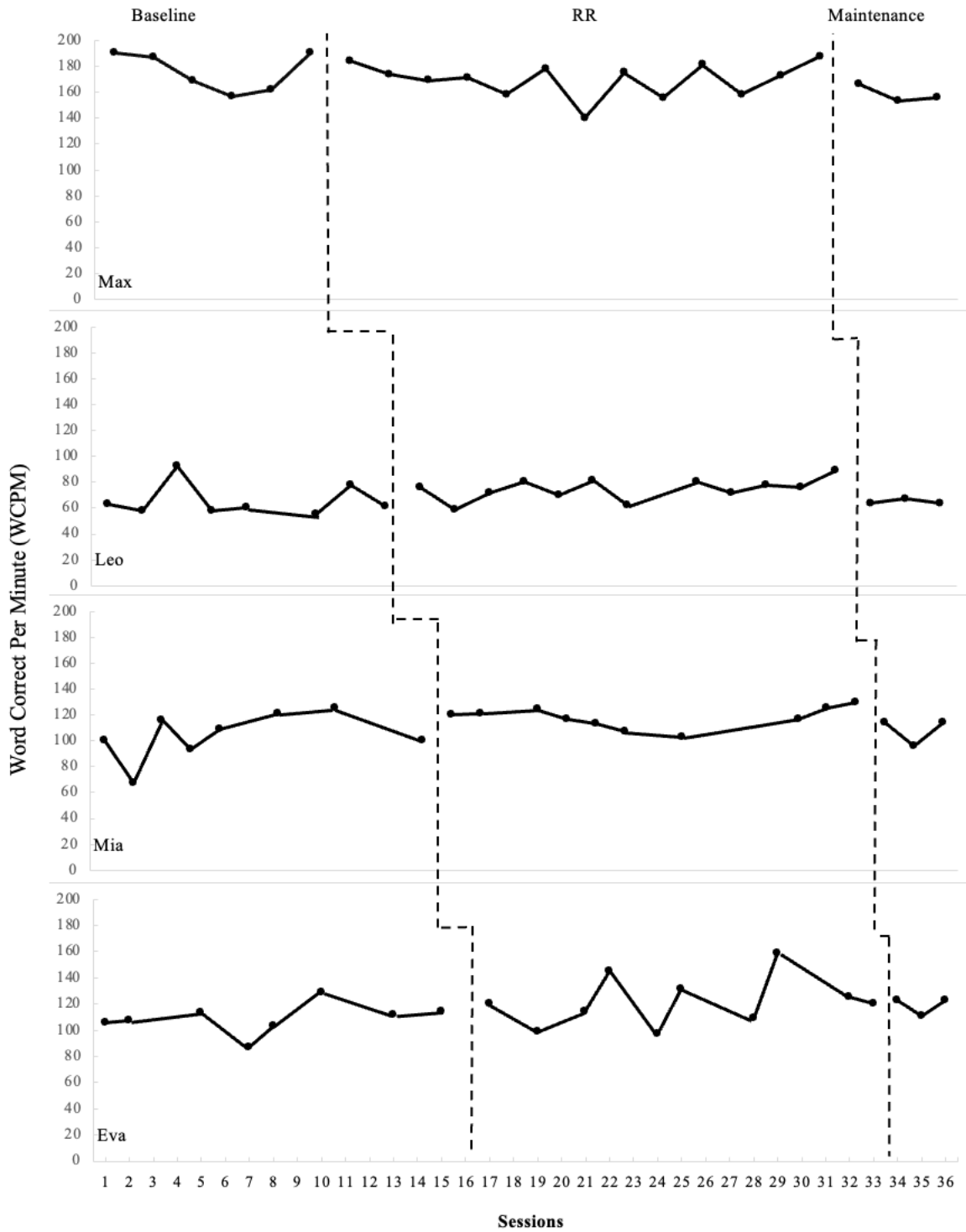


Figure 1. Participants' Number of WCPM for Baseline, Intervention, and Maintenance

Max

Max was the first participant to move from the baseline to the intervention and maintenance phases. During the baseline, Max had a mean of 176 WCPM. His highest score was 187 WCPM during the baseline sessions. He consistently demonstrated moderate to high WCPM scores during the baseline phase, except in a single session where the learner achieved a remarkable 190 WCPM. This score, significantly higher than the other baseline data points, was identified as an outlier. The unusually high WCPM during this session may have been influenced by external factors such as his motivation toward the intervention, the length of the passage (he checked the number of pages during each session), or familiarity with the content. Therefore, while it was included in the visual analysis, it was interpreted with caution to ensure the accuracy of the assessment. His baseline result was relatively stable, and his last data point showed a slightly decreasing trend, indicating that intervention was appropriate at this time with low variability (see Figure 1). After three decreasing data points, Max started the RR intervention. During the intervention sessions, his highest score was 188 WCPM. During the RR phase, he showed a slightly steady line $M = 170$, ranging from 140 to 188 WCPM. During the maintenance, WCPM was lower than the baseline, with an average of $M = 158$. The PND for Max, comparing the baseline data to the intervention data, was 7.7%, which was deemed ineffective by Scruggs and Mastropieri (1998). Max reading was so fluent, and he made no error during the three phases.

Leo

Leo, the second participant, progressed from the baseline phase to the intervention phase and then to the maintenance phase (see figure 1) for WCPM for each session. After the researcher observed stable data points, the baseline results indicated a range of scores of 55 to 92

WCPM. Overall, his baseline results were relatively stable. However, the last data point showed a slight decreasing trend, suggesting that it was appropriate to initiate the intervention at this time due to low variability. Following three consecutive decreasing data points, Leo began the RR intervention. During the RR phase, he demonstrated a somewhat steady trend with a mean of 75 WCPM, which was higher than the baseline's $M = 66$. In the maintenance phase, Leo's WCPM scores were 64, 67, and 75. The Percentage of PND for Leo between the baseline and intervention phases was 33.30%, which was deemed ineffective based on the criteria established by Scruggs and Mastropieri (1998). During the intervention phase, the participant's errors per minute were as follows: 3, 1, 2, 1, 1, 2, 1, and 1.

Mia

Mia was the third participant who transitioned from the baseline to the intervention phase to the maintenance phase. Following the researcher observed a stable data point during the baseline (see Figure 1), Mia had a mean of 104, with a range of 67 to 125 WCPM during the baseline sessions. Her higher 125 WCPM scores during baseline, possibly due to maturation effects, are a significant finding. This is particularly noteworthy as she remained in the baseline longer than the other participants, potentially influencing the results. As Ledford and Gast (2018) point out, maturation can pose a significant threat to the internal validity of SCD, especially when improvement results from the passage of time rather than the introduction of the independent variable. Another factor that contributed to the higher baseline was the extended time spent in the baseline, which also increased exposure to the test or environment, leading to improvement due to practice effects or test-retest familiarity, rather than due to the treatment. During the RR intervention phase, she showed a slight steady line with $M = 118$, ranging from 103 to 130 WCPM. Mia started the maintenance after achieving one point higher than the

baseline during the RR intervention. During the maintenance, she read 114, 96, and 99 WCPM, lower than the baseline, and the intervention with $M = 99$. The maintenance data points were below the baseline and the intervention phases. Mia's PND between the baseline and the intervention was 30%, which was ineffective by Scruggs and Mastropieri (1998). During the intervention phase, Mia's errors per minute varied across sessions. The number of errors recorded per one-minute reading sessions was as follows: 4, 3, 2, 2, 4, 3, 2, 3, and 1.

Eva

Eva was the fourth participant who transitioned from the baseline to the intervention phase and then to the maintenance phase. After the researcher observed a stable data point during the baseline (see Figure 1), she had a mean of 109 WCPM for the baseline, with a range of 87 to 129. Her baseline result was relatively stable, and his last data point showed a slightly decreasing trend, indicating that the intervention was appropriate at this time with low variability. After three decreasing data points, Eva started the RR intervention. During the RR intervention phase, she showed a slight steady line with $M = 121$, ranging from 62 WCPM. During the maintenance, she scored 123, 111, and 108 WCPM, which was lower than the baseline and the intervention, with a range of 15. The intervention mean was higher than baseline, and the maintenance mean was $M = 119$ (data points were below the baseline and the intervention phases). The PND for Eva between the baseline and the intervention was 30% which was ineffective by Scruggs and Mastropieri (1998).

During the intervention phase, the participant consistently made one error per one-minute reading session across all three sessions. The number of errors remained stable at one per minute, indicating a steady pattern of reading accuracy with minimal variation. This consistency suggests that the participant maintained a controlled level of performance throughout the intervention.

Social Validity

After completing their final maintenance probe, the researcher conducted individual questionnaires with each participant to assess their perspectives and attitudes toward the RR intervention at the end of the study (refer to Appendix I for the list of questionnaires used). The goal was to gather the participants' opinions on the impact of the RR program on their reading skills. All four participants agreed that using RR had a positive influence on their reading abilities. Mia stated, "I like seeing how far I progressed in one minute, and I also enjoy finishing the story." The students collectively noted that RR helped them remember key details such as the setting, characters, names, and specific passages. One student mentioned that after reading a passage twice, they could recall particular names and places. In response to the second question, which sought clarification on which elements of the RR activity they found enjoyable. Mia remarked, "I enjoy seeing the progress of my reading between the first and second reading," while Leo added, "I like seeing how far I progressed from the first reading." Eva emphasized that when the researcher provided explanations of the passage, characters, and setting before reading, it significantly improved my engagement. Max stated, "I like it when you explain the story because it helps me understand it better."

In response to the third question, all four participants confirmed that the repeated reading (RR) activity facilitated their recall of the text. Mia noted that this approach helped her remember both the settings and the characters. Max emphasized that the RR method enhanced his comprehension of the passage. Similarly, Leo mentioned that the RR allowed him to grasp the overarching theme of the story more effectively. Eva explained that the second reading felt more manageable than the first, as she had become more familiar with the content. Leo succinctly expressed, "I find it easier when I go over it twice, as it helps me understand what I

am reading." The fourth question was, would you consider using the RR in the context of social studies, science, or when reading your e-books? The participants' responses varied based on their experiences. Eva used the e-book to read the text twice, while Leo used it to help him with his reading, as reading caused him fatigue. Mia reported that she used the repetition in the e-book three to four times while doing her. Some students said they already use RR strategies in other contexts, like when preparing for a test or trying to understand homework. Others used text-to-speech as a reading aid in different classes.

Interobserver Agreement

While the researcher collected data, the paraprofessionals (the researcher's advisors) were present periodically to collect interobserver agreement (IOA) data during the baseline and the intervention sessions. The paraprofessionals were trained in data collection, and the researcher collected data during all sessions. However, the paraprofessionals collected data during at least 25% of the study conditions. The researcher remained on one side of the participant, within view of her actions, while the paraprofessionals were positioned on the opposite side of the study setting. Both observers collected data simultaneously and separately on the number of steps independently completed and those that required prompting. No sessions were recorded during any phases.

Data collection was done on separate data sheets, and each step in the task analysis was compared following completion of the session to observe agreement. Disagreements on the data were marked on the researcher's copy, and a note was made to signify the percentage of task completion for each participant when a disagreement occurred. The agreement was 100% on the baseline and intervention steps. The disagreement was only in the number of WCPM for one of the participants. The RAs collected data for 25% of the sessions to assess CWPM. To compute

the point-by-point agreement, the following formula was applied: $(\text{agreements} / [\text{agreements} + \text{disagreements}]) \times 100$ (Cooper et al., 2007). The mean IOA for reading fluency was as follows: Max at 100%, Leo at 100%, Mia at 98%, and Eva at 100%.

Treatment Integrity

Treatment integrity data were collected using the implementation fidelity checklist (see checklists in Appendices H and I), which guided the researcher and their advisors through each step during the baseline and intervention phases. Even though there was no IOA for the maintenance phase, the procedures were the same as the baseline. The overall mean treatment integrity was 100%. The fidelity checklist provided a prescribed method for implementing the intervention, which included the researcher's and participants' copies, a timer, and datasheets. It explained what the passage was about and shared the difference between the two readings of WCPM after the first and second readings. The researcher's advisors who collected treatment integrity data for approximately 25% of intervention sessions. The advisors marked on the checklist each time a procedure was observed or if the primary researcher missed a step. Treatment integrity was determined by dividing the number of observed researcher behaviors by the number of anticipated instructor behaviors and multiplying by 100 (Billingsley et al., 1980). The overall treatment integrity mean was 100%.

Discussion

This research aimed to examine the potential effectiveness of using RR as a reading intervention to increase reading fluency and its perceived usefulness by young adults with ID. All learners with ID have reading problems, specifically ORF. The target of this reading intervention was to help the participants recognize the benefits of rereading the same passage in terms of their reading fluency. The results of this study indicate that the outcomes of the RR

intervention on reading fluency were not consistently substantial among participants. While some minor improvements were noted, the overall impact of the intervention was modest at best, and in some cases, it was ineffective. All four participants expressed unanimous agreement, indicating a strong preference for the explicit instruction provided by the researcher, particularly during the presentation of the setting and characters. This feedback further emphasizes the positive impact of the intervention, offering reassurance regarding its potential effectiveness. However, while some students demonstrated benefits from RR, including improved comprehension and enhanced progress tracking, these gains were inconsistent and not significant on the ORF. The study highlights the necessity for additional research, reiterating the potential of RR intervention and fostering optimism about its future development.

When applying the RR to increase reading fluency in learners with ID, it is important to note the role of Vygotsky's theory (1978). It is crucial to refer to it as Sociocultural Theory, which emphasizes the vital role of social interaction, language, and cultural tools in learning. A key component of this theory is the ZPD, which highlights the difference between what learners can accomplish independently and what they can achieve with guidance or collaboration which was delivered by the researcher. RR is an example of scaffolding that aligns with Vygotsky's theory. In this approach, a more knowledgeable individual. During RR, students engage in guided reading practice and receive feedback, corrections, and encouragement. These forms of social mediation assist learners in transitioning from dependence on help to independence. Moreover, since language is viewed as a primary cultural tool in Vygotsky's framework, the process of repeatedly engaging with text especially when done aloud and with assistance helps learners internalize language structures, vocabulary, and reading strategies. Piaget's theory of cognitive development (1952) also plays a key role, as it underscores the importance of using

learning strategies among this population of learners with ID. When students repeatedly read a passage, they gain familiarity with sentence structures, vocabulary, and the rhythm of language. This practice strengthens their ability to decode fluently, which frees up cognitive resources for understanding and expressing what they read, core communication components. This aligns with Scarborough's Reading Rope, which posits that RR is a fluency-building strategy that helps integrate both word recognition and language comprehension.

Another theory that heightened the RR as a reading intervention was the Automaticity theory, which states that to understand what they read, students must be able to recognize words quickly and effortlessly, automatically, without requiring much mental effort. This is what participants in this study used during the second reading. Last, the ABA participant in this study applies and engages in RR of the same passage two times per session. The researcher provided error correction after each attempt and delivered praise, for example, "Great job improving your speed!" contingent on increased WCPM. Datasheets are reviewed daily to monitor progress and mentor instruction based on participants' performance.

Since the baseline, Max demonstrated a high level of reading fluency. However, the reading fluency of the other three participants, as measured by WCPM, was as follows: Leo, $M = 66$. When the intervention phase began, there was an immediate increase in the WCPM, *with a mean of 75*. Mia's baseline reading fluency was $M = 104$; when the intervention phase began, there was an immediate increase to $M = 118$. As for Eva, the baseline mean was $M = 109$, and there was a significant increase in reading fluency as the reading intervention progressed, with a mean of $M = 121$. These results from the RR intervention phase demonstrate immediate, though modest, benefits of RR intervention on reading fluency. Most SSD research was conducted over 4 to 20 weeks, a duration that allows sufficient time for students to demonstrate meaningful gains

(Lee & Yoon, 2017; Chard et al., 2009; Therrien, 2004). In contrast, the current study was implemented over a more intensive, short-term period of four weeks, providing significant findings on the effects of RR.

During the RR intervention, the participants received error correction to improve their reading fluency. Max did not require error correction, as his reading was already very fluent, and his second readings were generally more fluent than his first. In contrast, Leo exhibited some variability in the initial sessions but demonstrated a generally low and stable error rate throughout the intervention. After the first session, the number of errors decreased and remained between 1 and 2 errors per minute, indicating consistent reading accuracy as the intervention progressed. His reading errors decreased from the first reading as he got better in his second reading. Mia showed fluctuations in her performance, but there was a reassuring gradual decrease in errors during the later sessions, suggesting a steady improvement in her reading accuracy over time. Her highest number of errors was 4, while the lowest was one error per minute; her reading fluency increased in the second reading more than in the first reading, with fewer errors. Similarly, Eva also showed fluctuations; however, she had a consistent and reassuring decrease in errors in the later sessions, indicating steady improvement in her reading accuracy. Her second readings were mostly more fluent than her first readings. Like Mia, her highest number of errors was 4, and the lowest was one error per minute.

Recent research findings, despite a prevalence of 7% to 30% of PND, have highlighted the potential of RR as an effective intervention for improving reading fluency. This intervention has shown a minor improvement, but its significance cannot be overstated. It is a testament to the importance of the research, as it enhances academic performance among students with ID. These results, which significantly contribute to our research body, underscore the crucial role of

academic education in improving the skills of learners with ID. They also emphasize the importance of researching these students, particularly in the area of reading fluency.

Regarding the second question, "How do postsecondary students with ID perceive the use and efficacy of the repeated reading intervention?" the students shared the following insights: Max mentioned that the RR strategy made the passage feel more familiar, which increased his comfort level and allowed him to focus more on expression. Leo expressed excitement about how he noticed his reading becoming faster and smoother with each repetition of the passage. Mia appreciated the visible progress she made, as it boosted her confidence and made reading feel more rewarding. She also enjoyed receiving praise from the researcher, noting that encouraging words and recognition of small achievements created a positive reading environment and made her look forward to each session. Lastly, Eva pointed out that turning repeated reading into a friendly competition or game-like activity made the process more engaging and motivating.

CHAPTER FIVE CONCLUSION AND RECOMMENDATIONS

Summary

This research extended the existing body of research that examined the effectiveness of applying interventions to students with ID, which would benefit. More specifically on the use of RR as intervention on the reading fluency (Alber-Morgan et al., 2007; Allor et al., 2010; Freeland et al., 2000; Hudson & Test, H; Hua et al., 2012; Hua et al., 2018; Mims et al., 2012; Therrien & Budin, 2008). Learners who develop reading fluency typically perform better in other academic subjects. Fluency facilitates the learning process, making it easier for students to learn more information and comprehend complex material more easily. Additionally, fluency increased motivation: When readers could read fluently, they were more eager to participate in class activities and discussions, thereby fostering a more dynamic learning environment.

Furthermore, fluency facilitated comprehension, allowing the reader to focus on meaning rather than decoding, making it easier to understand a text. Additionally, when learners read with fluency, they developed self-confidence. Reading fluently promoted a sense of success and accomplishment, which increased the reader's self-confidence.

During this research, the researcher implemented a multiple-probe intervention on the RR to increase reading fluency among four participants with ID. The participants read the passage once during the baseline and maintenance sessions and twice during the RR intervention. The research provided explicit instructions about the passage, allowing the participants to become more familiar with the content. The results showed a small increase in the ORF using WCPM as measurements, indicating a meaningful improvement in reading fluency. Participants reported that RR reduced the cognitive effort required to decode words, providing a sense of relief and

allowing them to improve their speed and accuracy. They also pointed out that they made fewer mistakes each time they repeated the passage because the words were automatically recognized.

Limitations

While the repeated reading intervention has shown promise in enhancing oral reading fluency, it is essential to acknowledge several methodological limitations. This understanding was vital for accurately interpreting the findings and inspiring future research that can address these limitations. First, the intervention procedures included only two repeated readings per passage, which may have limited participants' opportunities to develop automaticity and fluency. Earlier research supports the use of three to four repetitions to promote stronger improvements in fluency (e.g., Strickland et al., 2020).

The limited exposure may not have provided sufficient practice for participants to internalize decoding patterns or improve their prosody and expression. The second limitation was that participants continued reading the entire passage rather than stopping at the one-minute mark, which deviates from standard fluency assessment practices such as CBM. This procedural variation may have affected the consistency and comparability of WCPM scores. Furthermore, reading beyond one minute could introduce variability in student engagement and fatigue, possibly influencing fluency outcomes in unintended ways. The reading passage length differed from session to session; some were one page long, and others were two and a half pages long.

The fourth limitation was the absence of IOA during the maintenance phase, which resulted from the timing and other commitments of the participants. This absence of IOA, a method for ensuring inter-rater reliability, could introduce bias or error in the data interpretation. Given the timeline, the researcher's observation of at least three stable consecutive data points before moving to the next participant was challenging. The fourth limitation was that the reading

passages were not specifically designed for older adolescents or young adults with intellectual disabilities. This could have affected the participants' engagement and motivation, as the materials may not have been as interesting or relevant to them, which was the case for Max. Although the materials were accessible, they may not have reflected the social or linguistic interests of this age group, which could potentially affect student motivation and the authenticity of engagement. Age-inappropriate materials can reduce the ecological validity of the intervention and limit its applicability to real-world functional literacy tasks. As for this group, they already had their classes, which contained college-level materials, so they did not find the reading passage challenging, as it was similar to their college-level classes, as mentioned by Eva.

Another limitation related to the passage is the length of the phases and the passages, which caused fatigue for Leo. Finally, there was the time period that included participant absences, which impacted the length of the baseline and RR intervention phases during sessions. This absence affected the total number of sessions conducted. The baseline sessions lasted six sessions for the first participant and eight sessions for the remaining three participants. The intervention phase continued for 13 sessions for the first and second participants and 10 sessions for the third and fourth participants. These limitations underscore the crucial need to refine fluency interventions and tailor materials to meet the developmental and motivational needs of older learners with intellectual disabilities. This understanding can engage and commit us to improving the field of literacy interventions.

Future Research

Despite limited evidence suggesting that RR is an effective teaching and learning practice for individuals with ID to increase their reading fluency, conducting future research with larger participant groups remains vital, with more RR intervention sessions. This will deepen educators'

understanding of the relevance of this research and its potential benefits for a diverse array of individuals with ID. Future research should examine the effectiveness of RR interventions for postsecondary students with ID when delivered by peers or educators, as well as the potential benefits of incorporating audio-assisted technology to enhance reading fluency. There remains a pressing need for ongoing reading research across different age groups. Implementing RR for learners with ID at earlier educational stages, such as elementary school, through longitudinal studies could yield more insightful results. Evaluating reading fluency through RR for learners with and without disabilities would offer fresh perspectives on reading skills. It is essential to utilize familiar, concise, and graded reading materials during repeated reading sessions and to provide consistent positive reinforcement, which can boost motivation for learners.

Teachers should be encouraged to monitor reading fluency progress using quantitative tools like WCPM and performance analysis techniques. Comparing the functions integrated into the reading repetition interventions and how students engage with these could be beneficial for future investigations. Combining RR with other teaching methods could further enhance research outcomes such as comprehension or error corrections. Future studies should consider integrating audio or visual support to improve reading fluency, helping to model effective reading strategies before assessing their impact on fluency in comparison to traditional RR methods. Researchers should conduct repeated reading with the entire class before transitioning to individual instruction, as this approach enables more effective measurement of outcomes. There is also a need to explore the effectiveness of RR when paired with technological tools, such as educational apps.

Conclusion

This study explored the effects of RR on enhancing reading fluency among four post-secondary students with ID enrolled in a transition program. Despite RR being effective in younger students, the findings revealed that it did not lead to significant improvements in reading fluency for the participants. While some students experienced minor increases in their WCPM during RR sessions, these gains were not consistently maintained. Participant feedback was mixed; while some felt that RR helped with comprehension and tracking progress, others found it useful for other subjects. The study highlights the necessity for further research, suggesting that RR alone may not be adequate for improving reading fluency in this demographic, and emphasizes the importance of individualized and age-appropriate reading interventions. Limitations included a small sample size and a short study duration, indicating a need for more comprehensive reading strategies in post-secondary education for students with ID.

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APPENDICES

Appendix A. The Students' Consent Form

Research Study Title: Using Repeated Reading to Increase Reading Fluency Among Postsecondary Students with Mild Intellectual Disabilities

Researcher(s):

Dr. Tara Moore, associate professor, University of Tennessee, Knoxville

Dr. Catherine Smith, clinical associate professor, University of Tennessee, Knoxville, Marwah

Alammari, PhD student, University of Tennessee, Knoxville

Why am I being asked to be in this research study?

We are asking you to take part in this study to help us learn if using research-based reading strategies can help students with disabilities improve their reading fluency.

Who is conducting this research study?

Our names are Dr. Tara Moore, Dr. Cate Smith. We are professors at the University of Tennessee. Our PhD student Marwah Alammari would be working with us to conduct our study.

How long will I be in the research study?

There will be one assessment session to determine the student's reading.

If you agree to be in the research; your participation will last for 20 minutes; your participation will last for 4 weeks and involve 20 sessions and one brief questionnaire.

What will happen if I say "Yes, I want to be in this research study"?

If you agree to be part of this study, we will use a fake name (pseudonym) to keep your information private. You will be asked to read a passage, and the sessions will happen in a quiet classroom, during breaks, or at other times outside of their regular classes. The goal is to help improve reading fluency. During the study, you will read on their own for one minute while the researcher listens. Each session will last no more than 15-20 minutes, and the whole study will last about 4 weeks. The researcher will give clear instructions and set up times to make sure everything is done as planned. These process aims to determine whether using this reading strategy increases the number of words read correctly per minute by the participants.

The researcher would have some questionnaire about the intervention such as: (a) Do you think repeated reading affects your reading skills?; (b) What aspects of the repeated reading activity did you find enjoyable?; (c) Did the repeated reading activity help you remember the text ?; and (d) Would you consider using the repeated reading in the context of other classes, or when reading your e-books?

The information we collect may be shared at conferences or in articles, but your name will never be shown. We will use fake names (pseudonyms) to keep their identity private.

What happens if I say “No, I do not want to be in this research study”?

You don't have to be part of this study if you don't want to. You can say no now or choose to leave the study later. Either way, it won't affect your grades, your relationship with your teachers, or your education.

What happens if I say “Yes” but change my mind later?

Even if you agree to participate in the study now, you can change your mind and withdraw at any time. If you decide to stop before the study is completed, please contact the researchers via email or text to inform them that you wish to withdraw. All data related to you will be destroyed and deleted.

Are there any possible risks to me?

You are already getting special help with your learning. There should be no extra risks, just like regular lessons. To keep your information private, you will be given a fake name, and all the information will be recorded with that name. This way, your personal details stay safe and secret during the study.

Are there any benefits to being in this research study?

This study is meant to help improve reading skills. By being part of it, your teachers might find better ways to help you with reading. If the results are shared in an article or presentation, it could help other teachers too. They might learn if the methods used in this study can help their students get better at reading as well.

Who can see or use the information collected for this research study?

To keep your information private, each student in the study will be given a code name instead of their real name. This way, no one will know who you are in any report. The university's name

will not be mentioned. Instead, it will be described as “a college program for young adults with disabilities in the Southeastern United States.” All the information from the study will be kept in a locked filing cabinet. Only the people working on the study will be able to see the information. If any results are shared at meetings or in articles, your name and personal information will not be used.

We will try our best to keep your information safe and private. However, there are a few people who might need to see the information we collect:

- People at the University of Tennessee, Knoxville, who make sure the study is done correctly.
- Government groups that help make sure research is safe and done the right way.
- If a law or a court asks for the information, we would have to share it.

What will happen to my information after this study is over?

We might share your research information with other researchers, but it won't have anything that could identify you. We may also share the results to show that reading practice can help students with disabilities get better at reading.

What else do I need to know?

Being part of this study is completely up to you. You won't get in trouble if you choose not to join. If you decide to take part, you can stop at any time. If you leave the study before the data is collected, your information will be erased.

Who can answer my questions about this research study?

If you have any questions or concerns about this study, or if something goes wrong during the study, contact the Dr. Tara Moore at 865-974-6459 or by email, tmoorepa@utk.edu, or Catherine Smith at 865-974-4156 or by email, ccaudle1@utk.edu.

For questions or concerns about your rights or to speak with someone other than the research team about the study, please contact: Institutional Review Board

The University of Tennessee, Knoxville

Phone: 865-974-7697

Email: utkirb@utk.edu

STATEMENT OF PERMISSION

I have read this form and the research study has been explained to me. I have been given the chance to ask questions and my questions have been answered. If I have more questions, I have been told who to contact. By signing this document, I am agreeing to be in this study. I will receive a copy of this document after I sign it.

Name of Adult Participant	Signature of Adult Participant	Date
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Researcher Signature (to be completed at time of informed consent)

I have explained the study to the participant and answered all of his/her questions. I believe that he/she understands the information described in this consent form and freely consents to be in the study.

Name of Research Team Member	Signature of Research Team Member	Date
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Appendix B. Example of the Reading Passage

Reading to Max

By Heather Klassen

“This Saturday, we’ll be visiting cats at the animal shelter. If you’d like to join us, here’s a flyer,” said Ms. Delgado, the school librarian.

Ben loved cats, and he had always wanted one. He hurried to grab a flyer.

Then Ms. Delgado added, “We’ll be reading to the cats.”

Ben stopped. Reading was hard. Still, he really wanted to visit the cats, so he took a flyer anyway.

After school, Ben showed the flyer to Dad.

“That sounds great,” Dad said.

On Saturday, Ben and Dad met some of Ben’s classmates and their parents at the shelter.

“This is Max,” the shelter worker told Ben as she handed him a gray cat.

Ben carried Max to a beanbag chair. When Ben sat down, Max settled onto his lap.

“Here’s my book,” Ben told Max. He had taken a book he’d been working on.

He started reading, and Max purred. After a few minutes, Ben looked up.

Some of the cats stayed on his classmates’ laps, but other cats roamed the room while the kids read.

Ben stroked Max’s back. I’m glad Max is staying and listening to me read, he thought.

On the way home, Ben told Dad, “Max is the best cat ever.”



“I’m glad you two are buddies,” Dad said. All week, Ben waited for Saturday. When it arrived, Ben got to read to Max again. Ben read and read while Max purred and purred.

“What if someone adopts Max?” Ben asked Dad later.

“I guess you’d read to a different cat,” Dad said.

But I don’t want a different cat, Ben thought.

Ben even told his next-door neighbor, Mrs. Patel, about Max.

“Max sounds like a special cat,” said Mrs. Patel.

Ben agreed.

Every Saturday, Ben read to Max. “I wish we could adopt Max,” Ben said to Dad. He knew they couldn’t. Mom had allergies.

Dad nodded. “But it’s nice you can see Max at the shelter, right?”

“Yeah,” said Ben.

One day at school, Ben realized that reading seemed easier. Still, he was surprised when Ms. Delgado gave him the Most Improved Reader award. “I want to show my award to Max,” Ben told Dad.

But on Saturday, Ben couldn’t find Max at the shelter.

“Someone must have adopted Max. What if I never see him again?” Ben said, frowning. Just then, Mrs. Patel walked into the visitors’ room, carrying Max.

“Max is a special cat,” Mrs. Patel said. “So I’m adopting him. You can come over every day to visit him.”

Having Max next door will be almost like having him as my own cat, Ben thought.

He smiled at Mrs. Patel.

“Now we can read every day,” Ben told Max as he stroked the cat’s back.

Max purred.

Appendix C. The Readability Statistics for the Passage.

Readability Statistics	
Counts	
Words	462
Characters	1,997
Paragraphs	31
Sentences	55
Averages	
Sentences per Paragraph	1.8
Words per Sentence	8.2
Characters per Word	4
Readability	
Flesch Reading Ease	91
Flesch-Kincaid Grade Level	2.6
Passive Sentences	0%

OK

Appendix D. Data Sheet

Repeated Reading Intervention Data Collection Sheet

Name of the student:

Session:

Data:

Baseline- Intervention- Maintenance

Examiner:

Observer:

Time start:

Time end:

Passage Title:

Passage Level:

Data Collection	First Reading	Second Reading	Note
Paragraph/ words			
WCPM			

Calculate Improvement (%) = [(Second CWPM - First CWPM) / First CWPM] × 100.

First reading =

Second reading=

Calculate improvement in which reading (%) =

Note:

Appendix E. Baseline and Maintenance Steps

Baseline and Maintenance Steps

Materials:

- Timer (stopwatch on phone)
- Researcher's Binder (passages, pens, datasheets, and gathering data sheets)
- Student's blinder (passages, pencil)

Direction

Steps	Check/Direction
1.	The researcher and the students would sit next to each other at one long desk.
2.	<ul style="list-style-type: none"> - The student had their passage placed in front of them. - The researcher would have her passage copy, timer, data sheet, and pen. - The researcher would say, "Okay, (name of the student), we are going to do some reading today."
3.	<ul style="list-style-type: none"> - The researcher would state, "You are going to read for 1 min, and when you hear the alarm, you have to stop, or I will ask you to stop your reading. Do you have any questions before we start? I would like you to read the text aloud for me, please, and try your best! We are going to start now." - The researcher would start the timer when the student starts reading the first word of the passage.
4.	<ul style="list-style-type: none"> - As the student read the passage, the researcher was noting any errors or mistakes on the researcher's copy of the passage. - Note: miscues included mispronunciation, insertion, deletion, substitutions, etc. Self-corrections should not be marked as errors.
5.	<ul style="list-style-type: none"> - When the timer goes off, the researcher asks the student to stop reading. - The researcher would mark in her paper where the students stop with using (), then asked the students to continue reading the whole passage. - The researcher said, "That was great reading!"
6.	<ul style="list-style-type: none"> -After the student finished reading the passage, the researcher would say to the students, "Thanks for your hard work (name of student), we are finished today, and you earned (give the student a choice between sticker and candy)." - The researcher would count the number of WCPM that the students read and write in the data sheet, and then gather the data accordingly.

Appendix F. List of Steps for Intervention Session

Intervention Steps

Materials

- Timer (stopwatch on phone)
- Researcher's Binder (passages with charts, pens, highlighter)
- Student's binder (passages, pencil)

Direction

Steps	Check/Direction
First reading	
1.	The researcher and the students would sit next to each other at one long desk, and place the passage in front of the students, and then the researcher would inform participants that the reading would be conducted twice.
2.	The researcher would provide the following information about the passage: <ul style="list-style-type: none"> - Encourage students to look into the image and share their thoughts! - What do they think the picture shows, and can they pinpoint where this location is? - Present the main characters of the passage and describe its setting. - Discuss the theme of the passage. - Summarize the passage, sharing only the beginning and the middle, without revealing the ending. - Encourage students to ask questions or share information or similar experiences related to the text's meaning.
3.	<ul style="list-style-type: none"> - The researcher instructed the participants to read aloud for one minute and to stop when they heard an alarm signaling the end of that minute. - The researcher also informed the participants that if they encountered a word they could not read, assistance would be provided within 3 seconds.
4.	The researcher presented the passage and started the timer as soon as the student began reading the first word, encouraging them to try their best.
5.	The participants began reading the passage while the researcher marked any miscues on her copy of the passage using the (/) symbol in those words.
6.	When the timer went off, the researcher told the student to stop reading if they did not stop by themselves. She marked where the student stopped in the passage with ().
7.	The researcher encouraged the student to complete the reading of the entire passage.
8.	The researcher then <ol style="list-style-type: none"> a) counted the WCPM; b) offered verbal reinforcement by praising their effort and correction of mistakes; c) reread any mispronounced words; d) provided clarification about the story (if needed); e) guided the students to read more fluently (if they hesitated); f) informed the participants how many WCPM they read for the first reading.

	The researcher would remind the students about the passages' setting and characters, as well as what happened in the beginning, middle, and end. Ask if the learners had a similar experience to the story events, if relevant, to make the reading more engaging for the participants.
9.	-After the first reading procedure was completed, the researcher would proceed to the second reading procedure.
Second Reading	
10.	The researcher would emphasis on the following information about the passage: <ul style="list-style-type: none"> - Encourage students to dive into the image and share their thoughts! What do they think the picture shows now, after you read the text, and if they can pinpoint where this location is? - Present the main characters of the passage and describe its setting, (e.g., feeling, skills, behavior depended in what the story was about). - Discuss the theme of the passage. - Summarize the passage, sharing only the beginning and the middle, without revealing the ending. - e) Encourage students to ask questions or share information or similar experiences related to the text's meaning.
11.	The researcher instructed the students to begin the second reading following the same guidelines as the first reading. The researcher encouraged the students to do their best, explaining that their reading would improve in term of speed.
12.	As the student read the first word, the researcher started the timer and followed along with same pressures in the first reading.
13.	Third, after one minute of reading, the researcher: <ul style="list-style-type: none"> - counted the number of words read; - provided encouragement; - helped with any mispronounced words; and - d) informed the participants how many WCPM they read for the second reading and compare it to the first reading discussed which reading was faster.
14.	At the end of the reading, the researcher praised the student's effort, saying, "Thank you, [name of student]! That was excellent reading today. We'll work together again tomorrow with a new passage! Now, let's get your reward for your hard work today. You can go enjoy the rest of your day!"
15.	The researcher would check her data (the student's name, time, the date, and any notes about the session).

Appendix H. Treatment Integrity Checklist (Baseline)

Treatment Integrity Checklist (Baseline)

Researcher being observed:

Observer: _____

Name of the student:

Date:

Title of the passage:

Intervention steps	Adherence		
	Implemented accurately & consistently	Partially accurate / consistent	Not done or not done accurately / consistently
1. Presenting the passage and prompting the student to read aloud	3	2	1
2. Starting the stopwatch when the student begins reading the first word	3	2	1
3. Following along with a copy of the passage	3	2	1
4. Marking misread words with a slash (/)	3	2	1
5. Providing the correct word after a 3-seconds hesitation and marking it as an error	3	2	1
6. Allowing the student to continue reading after the first minute	3	2	1
7. Providing verbal praise and/or physical rewards (stickers or candy)	3	2	1
8. Not providing feedback on reading fluency skills	3	2	1
9. Recording Correct Words Per Minute (CWPM)	3	2	1
10. Using different passages across baseline sessions	3	2	1
Sum of each column			
Overall sum			
Percentage (overall sum / #) x 100			

Appendix I. Treatment Integrity Checklist (Intervention)

Treatment Integrity Checklist (Intervention)

Researcher being observed:

Name of the student:

Title of the passage:

Observer: _____

Date:

Intervention steps	Adherence		
	Implemented accurately & consistently	Partially accurate / consistent	Not done or not done accurately / consistently
1. Placing the passage in front of the student	3	2	1
2. Providing background knowledge, and asking if they have questions	3	2	1
3. Prompting the student to read the passage aloud	3	2	1
4. Informing the student she/he will read twice per session	3	2	1
5. First Reading: Prompting the student to read for one minute and stopping at the alarm	3	2	1
6. Marking miscues (/) and stopping point ()	3	2	1
7. Counting CWPM	3	2	1
8. Providing verbal reinforcement	3	2	1
9. Rereading mispronounced words & clarifying the passage if needed	3	2	1
10. Guiding students to read fluently (if hesitations occur)	3	2	1
11. Second Reading: Following the same instructions as the first reading	3	2	1
12. Encouraging students to improve speed, accuracy, and expression	3	2	1
13. Marking words read & offering encouragement	3	2	1
14. Assisting with mispronounced words	3	2	1
15. Praising student effort and providing a prize	3	2	1
16. Checking data (student's name, session time, date, notes)	3	2	1
	3	2	1
Sum of each column			
Overall sum			
Percentage (overall sum / #) x 100			

Appendix K. WCPM performance across phases and passage texts tables.

K.1. Reading passages, baseline phases, and participant WCPM results.

Title of the Passage	Type	Students reading WCPM.			
		Max	Leo	Mia	Eva
1. To have friend	Narrative	190	63	100	106
2. Zebra and Wasp	Narrative	187	58	67	107
3. Reading to Max	Narrative	169	92	116	113
4. My Great Grandma	Narrative	162	60	109	103
5. Worms in Danger	Narrative	157	58	93	87
6. Hearing hoofbeats	Narrative	190	55	121	129
7. The draw anything drowning	Narrative		61	100	114
8. Good morning, Dear students	Narrative		78	125	

K 2. Reading passages, intervention phases, and participant WCPM results

Title of the Passage	Type	Students reading WCPM.							
		Max		Leo		Mia		Eva	
		F	S	F	S	F	S	F	S
1. Reaching out to the new kid	Narrative	177	184	63	76	120	98	96	120
2. Sabeel’s Shell	Narrative	153	174	58	59	104	121	99	98
3. The Champing of Quiet	Narrative	155	169	70	72	98	124	95	114
4. No shoes allowed	Narrative	165	171	80	74	117	103	122	145
5. The challenging game	Narrative	158	158	67	70	102	113	97	158
6. I can hear Spring	Narrative	174	178	59	81	93	107	101	131
7. As Good as You	Narrative	126	140	55	62	72	103	90	109
8. Hazel Groove	Narrative	175	188	72	80	99	117	130	159
9. Act Your age	Narrative	139	156	63	72	108	125	109	125
10. Jasmine Girl	Narrative	169	181	74	78	116	130	97	120
11. Louis Braille	Narrative	158	149	73	76				
12. Getting Even	Narrative	150	173	69	89				
13. The little, tiny thing	Narrative	160	188						

K 3. Reading passages, maintenance phases, and participant WCPM results.

Title of the Passage	Type	Students reading WCPM.			
		Max	Leo	Mia	Eva
Kevin’s big adventure	Narrative	156	64	114	123
The retake	Narrative	153	67	96	111
Game on!	Narrative	163	75	99	108

Note. F= first reading, S= second reading, No session for that participant

Appendix L. Passage Titles and Errors Per Minute During Intervention Sessions for Each Participant.

Title of the Passage		Error Per Minute (EPM)							
		Max		Leo		Mia		Eva	
		F	S	F	S	F	S	F	S
1. Reaching out to the new kid	EPM			3	1	4	2	1	
	%			4.45%	1.29%	3.22%	2 %	1.03%	
2. Sabeel's Shell	EPM					3		1	
	%					2.83%		1%	
3. The Champing of Quiet	EPM			1		2			
	%			1.40%		2 %			
4. No shoes aloud	EPM					2			
	%					1.68%			
5. The challenging game	EPM			2		4			
	%			2.89%		3.77 %			
6. I can hear Spring	EPM			1		3	2		
	%			1.66%		3.12%	1.83%		
7. As Good as You	EPM			1		2		1	
	%			1.78%		2.70%		1.09%	
8. Hazel Groove	EPM			2		3	2		
	%			1.38		3.03%	1.70%		
9. Act Your age									
10. Jasmine Girl	EPM			1		1			
	%			2.70%		1 %			
11. Louis Braille	EPM			1					
	%			1.56%					
12. Getting Even									
13. The little, tiny thing									

Note: EPM = Errors Per Minute; % Percentage of the error Pre minute; No EPM.

VITA

Marwah Ibrahim was born in Jeddah, Saudi Arabia, where she completed her education from kindergarten through her undergraduate degree. She graduated from high school in 2004 and went on to attend King Abdul Aziz University, earning her bachelor's degree in psychology in 2008. In 2010, Marwah moved to the United States to pursue her master's degree, which she completed with a focus in special education at Eastern Mennonite University in Harrisonburg, VA. During her high school years, Marwah worked at her community center. After obtaining her bachelor's degree, she spent a year working at an afternoon school for children with disabilities. Following her master's program, she joined Either Center for six months. Subsequently, she applied for a lecturer position at the University of Jizan, where she has been employed since 2014. Marwah's dedication to special education is rooted in her profound desire to give back and her vision for equitable access to education. This passion was shaped by her relationship with a cousin who was denied educational opportunities due to her mobility challenges, which arose at the age of 18. Despite the significant barriers she faced, education remained a source of immense joy for her cousin. Additionally, while serving as an assistant teacher, she became deeply invested in the curriculum and methodologies used to educate students with special needs. Marwah sees education as a pathway to an improved quality of life and a vital means of raising awareness within the community. This belief drives her to support individuals with disabilities in their educational endeavors, ensuring their parents have the same right to education as any other family. She firmly believes that education is interconnected across diverse fields and should be recognized as a fundamental right. Marwah advocates for teachers to uphold this right to the best of their abilities, fostering equality of opportunity for all students.