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Effects of Corrective Reading Decoding on the Reading Fluency Skills of Students with Mild

Intellectual Disabilities

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Abstract

Reading skills are an essential part of daily life. For students with mild intellectual disabilities, learning the reading skills necessary for everyday life is a difficult task that requires the use of a reading intervention. This study investigates the effects of a specific reading intervention, Corrective Reading Decoding, on the reading fluency skills of middle school students, ages 11-14, with mild intellectual disabilities. The study took place in a self-contained special education classroom in a suburban school system in the southeastern United States. Intervention took place daily for two reading groups, Decoding B1 and B2, until each level was complete (65 lessons). A single-subject pre/post-test AB design was used to compare student performance on the Oral Reading subtest of the Brigance Comprehensive Inventory of Basic Skills-Revised pre- and post-test and Aimsweb curriculum based measures during baseline, intervention, and maintenance phases. Data collection was evaluated by both the interventionist and a speech language pathologist to ensure reliability. The results of this study suggest that Corrective Reading Decoding is an effective intervention for teaching reading fluency skills to middle students with mild intellectual disabilities and adds to the current body of literature on Corrective Reading by generalizing the findings to another student population (middle school students with mild intellectual disability) and setting (self-contained classrooms).

Keywords: Corrective Reading, direct instruction, mild intellectual disability, reading fluency

Effects of Corrective Reading Decoding on the Reading Fluency Skills of Students with Mild

Intellectual Disabilities

Reading skills are an essential part of daily life. Children must learn to decode and comprehend texts in order to function academically and adaptively (Knight, Browder, Agnello, Lee, 2010). Students with intellectual disabilities (ID) have significant delays in learning basic reading skills that cause them to fall behind grade-level peers (Rosenberg, Westling, & McLeskey, 2008). Students with ID often have deficits in phonological and general oral language skills that inhibit the ability to read fluently and comprehend texts (Rosenberg et al., 2008). Reading instruction is needed to allow students with ID to have an "enhanced quality of life…and increased independence" (Knight et al., 2010, p. 3).

According to a report by Armbruster, Lehr, and Osborn (2003) for the National Institute for Literacy, there are 5 important components to reading instruction: phonemic awareness, phonics instruction, fluency, vocabulary, and text comprehension. By building phonemic awareness, students learn to spell words correctly and improve their ability to read words and comprehend text. Activities to build phonemic awareness include: phoneme isolation, identity, categorization, blending, segmentation, deletion, addition, and substitution (Armbruster et al., 2003). Phonics instruction teaches students how to relate letters and sounds and blend sounds to form words. Phonics instruction is most effective when it is systematic and explicit (Armbruster et al., 2003). Fluency allows students to read a text quickly and correctly, as well as comprehend what they read. The best way to build fluency is to provide students with opportunities for repeated reading aloud with guidance (Armbruster et al., 2003). Vocabulary knowledge helps readers comprehend texts. Indirect vocabulary instruction works best through reading aloud and discussing the passage before reading, during a reading, and after the passage is read

(Armbruster et al., 2003). Text comprehension refers to the student's ability to gather meaning from text. Six strategies for text comprehension instruction includes: monitoring comprehension, using graphic organizers, answering questions, generating questions, recognizing story structure, and summarizing (Armbruster et al., 2003). For students with disabilities, especially ID, learning the 5 components of reading can be a very difficult task that requires the use of a reading intervention (Bradford, Shippen, Alberto, Houchins, & Flores, 2006).

A comprehensive reading intervention that can be used with students with ID is direct instruction (DI). DI is an intervention that covers the scope and sequence of essential reading skills (Peterson, Marchand-Martella, & Martella, 2008; Przychodzin-Havis et al., 2005). DI is based on principles of explicit instruction, namely: "reviewing previous instructional targets, providing explicit goals for instruction, presenting instructional content in small components, delivering explicit explanations of these components, using modeling, making many opportunities available for active student participation, giving frequent feedback, checking for understanding, providing practice opportunities, and monitoring student performance" (Przychodzin-Havis et al., 2005, p. 38). DI differs from other explicit instruction models in that it provides not only a model for instruction delivery, but also a complete design for curriculum (Przychodzin-Havis et al., 2005). Instructions given in DI are clear and explicit to reduce student confusion and all tasks follow a given sequence of instruction, modeling, guided practice and independent practice. Skills taught through DI are also sequenced with easy tasks being taught first and then growing in complexity and difficulty (Przychodzin-Havis et al., 2005).

DI has provided successful results for students of varying ages including students in early and late elementary and middle school (Flores & Ganz, 2007). According to Flores and Ganz (2007), DI results in improved reading skills when used with children with disabilities, English

language learners, and children at-risk for school failure. Specifically, Flores and Ganz (2007) cite a study by Grossen (2004) that found that DI resulted in 2 years of improvement in reading skills of students with disabilities in just 1 year. Flores and Ganz (2007) cite another study by Carlson and Francis (2002) which found students instructed with DI demonstrated higher comprehension skills than peers who were not instructed with DI. Flores, Shippen, Alberto, and Crowe (2004) cite a study conducted by Bracey, Maggs, and Morath in 1975 that reported significant gains in the phonic decoding skills of students with moderate intellectual disabilities when taught using a DI program. These studies show that using DI to teach decoding and comprehension skills has proven to be an effective strategy (Peterson et al., 2008).

One specific DI intervention is Corrective Reading. Corrective Reading was created by Science Research Associates (SRA) as a stand-alone intervention to help students with decoding and comprehension deficits in grades 3-12 (Marchand-Martella, Martella, Orlob, & Ebey, 2000). According to Przychodzin-Havis et al. (2005), Corrective Reading is a core reading intervention program that is supported by an extensive research-base and follows the recommendations made by the National Reading Panel, the Alliance for Excellence in Education and the National Institute for Literacy. Specifically, Corrective Reading addresses all of the previously mentioned 5 essential components of reading outlined by Armbruster et al. in 2003 (Przychodzin-Havis et al., 2005). Corrective Reading assists with long-term learning by sequencing lessons from simple to complex and providing skills practice and review (Peterson et al., 2008).

Przychodzin-Havis et al. (2005) conducted a meta-analysis of 28 studies that used the Corrective Reading program and found that 26 of the 28 studies reported positive findings for students taught using Corrective Reading. Several of the articles cited found significant gains in the decoding and comprehension skills of students when taught using Corrective Reading. One

study reported a 12 month gain in decoding skills and a 10 month gain in comprehension skills

of upper elementary students in a 7 month period of instruction, and another study reported an 11

month gain in fluency and up to a 25 month gain in comprehension skills of 14- and 15-year-olds

in a 7 month period of instruction (Maggs & Murdoch, 1979). Benner, Kinder, Beaudoin, Stein,

and Hirschmann (2005) found that students taught with Corrective Reading had greater pre- to

post-test means when compared with students in a control group. Overall, Przychodzin-Havis et

al. (2005) found that students instructed with Corrective Reading had significantly higher scores

on an assortment of measures when compared to control groups. The research-base for

Corrective Reading is ample and studies examining the use of Corrective Reading should be used

by educators to make decisions concerning the effectiveness and use of reading programs

(Przychodzin-Havis et al., 2005).

Based on the previous information found on Corrective Reading, the investigator sought

to find more information detailing the effects of Corrective Reading on the reading skills of

middle school students with mild intellectual disabilities (MID). The investigator conducted a

comprehensive search of literature on Corrective Reading to find articles specific to Corrective

Reading and students with MID. The EBSCOHOST database was used to search for articles.

Descriptors included the following: direct instruction, *Corrective Reading*, intellectual disability,

and low-incidence disabilities. The investigation was refined by selecting the following journals:

Journal of Special Education, Journal of Intellectual Disability Research, Exceptional Children,

Journal of Intellectual and Developmental Disability, Teaching Exceptional Children, Mental

Retardation and Developmental Disabilities Research, and *Journal of Applied Research in*

Intellectual Disabilities. These journals were chosen from a list provided by EBSCOHOST and

were chosen based on relevance to the descriptors previously mentioned. In this review, articles

were also chosen based on relevance to the descriptors. In doing so, studies in which students were characterized as having other primary disabilities, such as learning disabilities, attention deficit hyperactivity disorder (ADHD), etc., were excluded from this review. However, studies with students with a primary disability of ID or any low-incidence disability and secondary disabilities such as learning disabilities, ADHD, etc. were included. Studies in which students were instructed in reading using an intervention other than DI or Corrective Reading were excluded from this review. Ancestral searches of the National Institute for Direct Instruction bibliography were used to identify other possible research articles. Overall, the investigator found 11 articles met the inclusion criteria that are discussed in this review.

Each of the studies found investigated the effects of Corrective Reading on different areas of reading skills of students with exceptionalities. Bradford et al. (2006) and Flores et al. (2004) studied the effects of Corrective Reading Decoding Level A on students with moderate intellectual disabilities (MOID). Although Bradford et al. (2006) and Flores et al. (2004) both studied Corrective Reading and students with MOID, each studied how Corrective Reading effected different reading skills. Bradford et al. (2006) studied letter sound correspondence, while Flores et al. (2004) studied reading comprehension skills. Peterson et al. (2008) and Polloway, Epstein, Polloway, Patton and Ball (1986) both studied the effects of Corrective Reading Decoding on students with ID. Flores and Ganz (2007) investigated the effects of the Corrective Reading Comprehension strand on students with developmental delays. Marchand-Martella et al. (2000) examined the effects of Corrective Reading on the reading skills of special education students. Lewis (1982) tested a theory that Corrective Reading Decoding B would produce a greater gain in reading fluency and comprehension of remedial readers than other methods. While all of these studies examined the effects of Corrective Reading on students with

reading difficulties (and varying disabilities), none of the studies specifically examined the effects of Corrective Reading on students with MID.

The settings for all studies varied greatly and included elementary, middle and high schools as well as public and private. Four of the studies took place in special education settings, three in self-contained classrooms and one in a private special education school. Bradford et al. (2006) and Flores et al. (2006) conducted their studies in a self-contained setting for students with MOID in a public school in a large southeastern city. Bradford et al. (2006) conducted their study in a middle school, while Flores et al. (2006) conducted their study in an elementary school. The study conducted by Flores and Ganz (2007) took place in a private school for individuals with autism spectrum disorders (ASD) and ID. Peterson et al. (2008) and Marchand-Martella et al. (2000) completed their studies in a large urban public high school in the northwest. Peterson et al. (2008) studied Corrective Reading in a self-contained classroom. Lewis (1982) conducted her study in an urban Comprehensive school in Britain. Polloway et al. (1986) completed their study in a rural and suburban school district in central Virginia. The variance in settings allows for generalizability of results to different settings.

All of the participants in the studies were school-age and either received special education services or were categorized as remedial readers who were at least 2 grade levels below their current grade. Five of the studies included participants who received special education services in low-incidence disability categories (Bradford et al., 2006; Flores and Ganz, 2007; Peterson et al., 2008; Flores et al., 2004; Polloway et al., 2006). Bradford et al. (2006) included 3 males ranging in age from 12 to 15 in their study. Two of the males were receiving special education services under the MOID eligibility category and the 3rd under the Traumatic Brain Injury (TBI) eligibility category. Flores and Ganz (2007) had 4 elementary students

participate in their study. The students included a 14-year-old 6th grade male with autism, an 11-year-old 5th grade female with autism, a 13-year-old 5th grade female with a mild intellectual disability and a 10-year-old 5th grade female with an ADHD (Flores & Ganz, 2007). Peterson et al. (2008) conducted a case study of a 16-year-old male with a Pervasive Developmental Disorder (PDD) and ID. Flores et al. (2004) included 3 male and 3 female participants ranging in age from 8 to 13 in their study. Of these participants 4 students were diagnosed with MOID, 1 with MOID and ASD and 1 with MOID and a speech impairment (Flores et al., 2004). Polloway et al. (1986) included a total of 119 students in their study. Seventy-eight of the participants were students with learning disabilities in grades 6 through 12, while 41 of the participants were students with ID in grades 6 through 12 (Polloway et al., 1986). Lewis (1982) studied 51 students age 11, with 31 male participants and 20 female participants. All of the participants in the study were identified as remedial readers with a reading age at or below 9.5 years (Lewis, 1982). Marchand-Martella et al. (2000) studied 22 students, 18 male and 4 female, who read at least 2 grade levels below their current grade. The different disabilities, inclusion of both male and female participants and wide age range allows for results to be generalized to a larger population of students.

　　　　Each of the studies implemented different levels or strands of Corrective Reading in different ways. Bradford et al. (2006), Peterson et al. (2008), Polloway et al. (1986), and Lewis (1982) studied Corrective Reading interventions that were administered by trained personnel who strictly followed the prescribed format. Bradford et al. (2006) followed the instructional procedures provided in the Corrective Reading Decoding Level A teacher manual and the instructor was a trainer of Corrective Reading. Instruction was provided 3 days a week for 45-55 minute sessions (Bradford et al., 2006). Peterson et al. (2008) administered Corrective Reading

Decoding B1 daily in 30 minute sessions by a graduate student trained in the Corrective Reading program. Polloway et al. (1986) placed students in either Corrective Reading Decoding Level A or B based on the Corrective Reading placement test. Teachers received training in the implementation of Corrective Reading and small groups ranging in size from 4-8 were provided daily instruction using Corrective Reading (Polloway et al., 1986). Lewis (1982) administered 5 lessons per week, 70 minutes a day, of Corrective Reading Decoding B to the experimental group of the study. Lewis followed the script developed by the publishers of Corrective Reading and the teacher was found to be achieving acceptable responses from the students, as well as establishing a teaching environment with positive reinforcement and consistently fast pacing of lessons (Lewis, 1982). The proper implementation of the program by Bradford et al. (2006), Peterson et al. (2008), Polloway et al. (1986), and Lewis (1982), as dictated by the Corrective Reading program, allows the researchers to rule out weaknesses in validity and fidelity.

Flores and Ganz (2007), Marchand-Martella et al. (2000), and Flores et al. (2004) did not use the entire Corrective Reading program as scripted. Flores and Ganz (2007) picked 3 strands (statement inference, using facts, and analogies) of the Corrective Reading Comprehension A program to implement instead of implementing the entire program. Flores and Ganz (2007) provided instruction in Corrective Reading Comprehension A for 20 minutes daily. One day a week both researchers were in attendance during instruction to ensure treatment integrity (Flores & Ganz, 2007). Marchand-Martella et al. (2000) focused on the 2 basic skills areas, word attack and story reading, of each lesson in the decoding strand. During each lesson, peer instructors followed the script carefully for each exercise; however, during the reading checkout exercise the script was not followed. In the reading checkout exercise, the script calls for each student to read a set number of words in a 1 minute period making no more than a set number of errors. For

example, students may have to read 90 words in a 1 minute period with no more than 3 errors. In

this study, students were allowed repeated readings of the story, with the first reading requiring

students to read the story in a 2 minute time period and then decreasing with each subsequent

reading (Marchand-Martella et al., 2000). Flores et al. (2004) made modifications to the

Corrective Reading Decoding A curriculum in order to establish 3 conditions and did not

implement the entire Decoding A program. The first condition consisted of instruction in the

ability to identify, discriminate and blend the sounds *m* and *a* (Flores et al., 2004). The second

condition built on the first and required students to be able to identify, discriminate and blend the

sounds *m, a, s,* and *t* (Flores et al., 2004). The third and final condition required students to blend

and decode the words *mat* and *sam* (Flores et al., 2004). All 3 of the conditions established by

Flores et al. (2004) were taught using the instructional script provided in the Corrective Reading

Decoding A. Because the program was not implemented as intended in the studies conducted by

Flores and Ganz (2007), Marchand-Martella et al. (2000), and Flores et al. (2004), the validity of

these studies may be affected and results may not be accurate or may not be able to be

generalized to other settings and participants.

The results in each study were different, as each study used different measures to assess

different areas of reading. Bradford et al. (2006) found that after the intervention was complete,

all students performed at 97% correct on the three performance measures, oral letter sound

correspondence, written letter sound correspondence, and word recognition. A maintenance

posttest given after summer break showed that students were able to maintain the skills learned

during Corrective Reading instruction (Bradford et al., 2006). Peterson et al. (2008) found that

the student who participated in their study was able to attain mastery of the reading skills taught

in the Corrective Reading Decoding B1 program. The results from the study showed that

Corrective Reading had significant impact on 4 of the 6 reading subtests of the Woodcock-Johnson Psycho-Educational Battery (Third Edition; WJIII; Peterson et al., 2008). Polloway et al. (1986) found that students with LD and ID showed gain on both subtests of the Peabody Individual Achievement Test (PIAT) and Corrective Reading produced a greater gain in results than previously used reading programs in the classroom. Results of the intervention conducted by Lewis (1982) show that the experimental group (Corrective Reading) had a mean gain of 6.59 months and the control group had a gain of 7.17 months on the SPAR standardized group reading test. Flores and Ganz (2007) determined that all 4 students met the established criterion across the 3 strands and there was a marked and significant change in student performance on statement inference, using facts, and analogies conditions. All students were able to maintain progress immediately after intervention was discontinued and 1 month after instruction ended (Flores & Ganz, 2007). Flores et al. (2004) found that all of the students were able to meet the condition for the sound "m" and "a" and 5 of the 6 students were able to meet the "s" and "t" and decoding constant-vowel-constant words conditions. Marchand-Martella et al. (2000) observed that students in all 3 levels of the Corrective Reading Decoding strand showed improvements from pre- and post- tests in vocabulary and comprehension.

Overall, all but 1 study (Lewis, 1982) found positive results, showing gains in reading skills after completion of Corrective Reading; however there were limitations to the studies examined. Many researchers addressed varying areas of reading skills and their measures for determining growth were not always relevant to the skills taught in Corrective Reading. For example, Polloway et al. (1986) were assessing the reading achievement of students with ID, but never operationally defined reading achievement and used the Peabody Individual Achievement Test (but did not specify any subtests used, like reading fluency or comprehension). Lewis

(1982) further supports this idea by suggesting that the reason students included in the 1982

study did not achieve higher gains with Corrective Reading than other programs was because of

the dependent measure used. Lewis (1982) suggested the study should be replicated with another

measure used to document growth. While these studies have shown that Corrective Reading is

effective in increasing the reading skills of students with disabilities, more studies need to be

conducted that use appropriate measures as means for documenting growth.

Many studies did not employ an entire level of Corrective Reading, but only utilized parts

of the program. Flores and Ganz (2007) picked 3 strands, statement inference, using facts, and

analogies, of the Corrective Reading Comprehension A program to implement. Marchand-

Martella et al. (2000) allowed for repeated story readings and extra time allotted to read the

story, neither of which is a part of the Corrective Reading program. Flores et al. (2004) used

some of the Corrective Reading Decoding Level A script to develop 3 conditions based on a

student's ability to identify, discriminate and blend the sounds *m, a, s,* and *t* and blend and

decode the words *sam* and *mat*, but did not employ the entire level as is prescribed by Corrective

Reading. While all of these studies produced positive results, the lack of fidelity with which

these interventions were implemented may cast aspersions on the findings.

One study indicates that Corrective Reading may not be an appropriate reading

intervention for students with articulation disabilities. Flores et al. (2004) included 1 participant

who was not able to meet the established criterion. The student could not meet the *s* and *t*

conditions because of an articulation deficit. The student's inability to meet the criterion suggests

that speech and language disorders may be a deciding factor when choosing appropriate reading

interventions for students with articulation deficits.

Corrective Reading was compared to other reading intervention programs in only 1 of the studies reviewed. Lewis (1982) compared Corrective Reading to other reading intervention programs, including The English Color Code program and teacher produced materials. All of the other researchers did not compare Corrective Reading to other reading interventions. Therefore, they cannot conclude for certain that Corrective Reading is more effective than or as effective as other reading interventions.

While Corrective Reading has been shown to be effective, more research is needed to investigate the effects of Corrective Reading on the reading skills of students with ID and middle school learners (Peterson et al., 2008; Polloway et al., 1986). According to the meta-analysis conducted by Przychodzin-Havis et al. (2005) only 3 of the 28 studies found included participants in middle or high schools, while none of the disability categories were identified as ID. Another meta-analysis conducted by Browder, Wakeman, Spooner, Ahlgrim-Delzell, and Algozzine (2006) found 128 studies conducted between the years of 1975 to 2003 included participants with ID. However, of those 128 studies, only 24% of the studies included participants in middle or high schools and only 55% of the studies were actually diagnosed with ID. The rest of the participants were diagnosed with "other" developmental disabilities, including autism, and/or were served in a low-incidence special education setting (Peterson et al., 2008).

There has been no set curriculum for students with ID served in self-contained classrooms and interventions for students with ID have been limited (Knight et al., 2010). Therefore, the purpose of this study is to add to the literature-base by evaluating the effects of Corrective Reading Decoding on the reading fluency skills of middle school students with intellectual disabilities. The implementation of the intervention, Corrective Reading Decoding,

will answer the following research question: What effect does Corrective Reading Decoding have on the reading fluency skills of middle school students with MID?

Method

Research Design

A single-subject pre/post-test AB design was used for this study. Single-subject design is appropriate when studying a change in behavior of a small sample size as a result of an intervention (Gay, Mills, & Airasian, 2006). Specifically, a single-subject design study compares each participant to his/herself, making each participant his/her own control, by measuring performance during non-treatment and treatment phases (Gay et al., 2006). Although a pre/post-test AB design single-subject design will not allow a true causal relationship to be determined based on the data, this design is a standard teaching design and will allow teachers to make educational decisions based on data. A single-subject pre/post-test AB design is appropriate for this study due to the small sample size (n=5) and the need to use participants as their own control and compare participants' performance on reading fluency measures during baseline to their performance on reading fluency measures post-intervention in order to demonstrate a relationship between Corrective Reading Decoding and reading fluency skills.

Setting

The study was conducted in a suburban school district in the southeastern United States. The district student population was comprised of 67% white students, 17% African-American students, 7% Hispanic students and 9% other. Thirty-two percent of the student population was eligible for free and reduced lunch. Of the total student population, 7.2% was served through special education programs and 32 students with intellectual disabilities were served in middle schools throughout the district.

The middle school where the study was conducted was comprised of 67% white students, 19% African-American students, 7% Hispanic students, and 6% other. Thirty-three percent of the student population was eligible for free and reduced lunch. Of the total student population, 6% was served through special education programs and 17 students with intellectual disabilities were served in the school.

The study was conducted in a self-contained special education classroom. Of the 9 students served in the self-contained classroom, 7 students were students with intellectual disabilities. The classroom was comprised of 50% white students, 38% African-American students, and 12% Hispanic students. Seventy-five percent of the students served in the classroom were eligible for free and reduced lunch. All of the students served in the classroom were taught using a functional curriculum with emphasis on relevant life skills. Students served in the classroom were all assessed on the Georgia Alternate Assessment (GAA).

Participants

Students were chosen as possible participants in the intervention based on the following set criteria: (a) received special education services in a middle school self-contained classroom, (b) received special education services under the eligibility category of MID, (c) were 11 to 14 years of age, (d) had IEP goals in reading fluency, and (e) placed in the Decoding strand of Corrective Reading following a placement test. Students who were not served in a self-contained middle school classroom, did not receive special education services under the MID eligibility category, did not fall in the age range of 11-14, did not have IEP goals in reading fluency and did not place in the Decoding strand of Corrective Reading were excluded from participation in this study. Based on the selection criteria, a total of 5 students were eligible and participated in the

study. Once participants were selected based on the set criteria, the interventionist sent home

parental consent forms (see Appendix A) and obtained student assent (see Appendix B).

Chasity. Chasity was a 13-year-old African-American female with MID in the seventh

grade. According to the Stanford Binet Intelligence Scales-Fifth Edition Chasity has an IQ of 62.

She received special education services in a middle school self-contained MID classroom.

Chasity has an IEP goal to increase her reading fluency skills from a first grade level to a second

grade level. Her Corrective Reading Decoding placement test placed her in the Decoding B1

level of Corrective Reading.

Nick. Nick was a 15-year-old Caucasian male with MID in the eighth grade. According

to the Wechsler Abbreviated Scale of Intelligence, 2nd Edition Nick has an IQ of 63. He received

special education services in a middle school self-contained MID classroom. Nick has an IEP

goal to increase his reading fluency skills from a third grade level to a fourth grade level. His

Corrective Reading Decoding placement test placed him in the Decoding B2 level of Corrective

Reading.

Christian. Christian was a 14-year-old Caucasian male with MID in the seventh grade.

According to the Wechsler Intelligence Scale for Children-Fourth Edition Christian has an IQ of

66. He received special education services in a middle school self-contained MID classroom.

Christian has an IEP goal to increase his reading fluency skills from a lower second grade level

to an upper second grade level. His Corrective Reading Decoding placement test placed him in

the Decoding B2 level of Corrective Reading.

Carolyn. Carolyn was a 13-year-old Caucasian female with MID in the seventh grade.

According to the Stanford Binet Intelligence Scales-Fifth Edition Carolyn has an IQ of 58. She

received special education services in a middle school self-contained MID classroom. Carolyn

has an IEP goal to increase her reading fluency skills from a lower second grade level to an

upper second grade level. Her Corrective Reading Decoding placement test placed her in the

Decoding B1 level of Corrective Reading.

   Alex. Alex was a 15-year-old Hispanic male with MID in the eighth grade. According to

the Kaufman Brief Intelligence Test, 2nd Edition Alex has an IQ of 57. He received special

education services in a middle school self-contained MID classroom. Alex has an IEP goal to

increase his reading fluency skills from a third grade level to a fourth grade level. His Corrective

Reading Decoding placement test placed him in the Decoding B2 level of Corrective Reading.

   Danielle. Danielle was a 14-year-old African-American female with MID in the seventh

grade. According to the Stanford Binet Intelligence Scales-Fifth Edition Danielle has an IQ of

55. She received special education services in a middle school self-contained MID classroom.

Danielle has an IEP goal to increase her reading fluency skills from a third grade level to a fourth

grade level. Her Corrective Reading Decoding placement test placed her in the Decoding B2

level of Corrective Reading.

   Interventionist. The interventionist is a special education teacher with bachelor's and

master's degrees in special education. The interventionist taught for three years prior to starting

the study, two in an interrelated setting teaching reading and math interventions (including

Corrective Reading) and one year as a self-contained MID teacher. The interventionist was

trained to teach Corrective Reading in her first year of teaching and has been trained by SRA to

train teachers how to teach Corrective Reading. The interventionist was familiar with the

participants and had worked with all 5 participants for one year prior to the implementation of

the study.

Independent observer. The school speech language pathologist who works with the selected participants served as the independent observer and assisted the interventionist in collecting reading fluency data. The speech language pathologist has a specialist's degree in communication science and disorders and has worked as a speech-language pathologist for 10 years in the school system and with the "Babies Can't Wait" program. The speech language pathologist is trained in the use of Aimsweb as a tool for monitoring student progress. The speech language pathologist was familiar with all 5 of the selected participants and had worked with the participants for one year prior to implementation of the study.

Independent Variable

The independent variable was the Corrective Reading program produced by SRA. Corrective Reading contains decoding and comprehension strands which can be taught together or separately, depending on the needs of the student and the time available for intervention (Przychodzin-Havis et al., 2005). Corrective Reading Decoding consists of Decoding Levels A, B1, B2 and C. Participants in this study were instructed using the Decoding Levels B1 and B2 based on the participants scores on the Corrective Reading placement test. Level Decoding B1 helps students who have difficulty reading words in isolation and in text (Engelmann et al., 1999). Upon completion of Decoding B1, students should read at a 3.5 to 3.9 grade level (Engelmann et al., 1999). Decoding B2 helps students who have difficulty decoding words in connected text and often make spelling mistakes (Engelmann et al., 1999). In level Decoding B2 students increase reading fluency and once finished with Decoding B2 students should be reading at a 4.5 to 4.9 grade level (Engelmann et al., 1999).

Dependent Variable

The dependent variable was reading fluency skills. According to Armbruster et al. (2003) "fluency is the ability to read a text accurately and quickly" (p. 19). Students who are able to read fluently not only recognize words automatically, but also read with expression and group words in order to gain meaning of the words read (Armbruster et al., 2003). Armbruster et al. (2003) suggest that the best way to formally measure reading fluency is to have timed measures of the students' reading and compare the number of words read correctly in a minute with oral reading fluency norms. It is suggested that calculating words read correctly in a minute is the most appropriate and efficient way to monitor fluency (Armbruster et al., 2003).

Measures

The measures of this study included the Oral Reading subtest of the Brigance Comprehensive Inventory of Basic Skills-Revised (CIBS-R: Bradley-Johnson, 1999) and reading fluency CBMs from Aimsweb. The CIBS-R is a criterion-referenced measure used to determine areas of academic strengths and weaknesses of students and plan for individualized instruction (Bradley-Johnson, 1999). The CIBS-R is comprised of 154 subtests designed to assess current functioning in areas of readiness, speech, listening, study skills, reading, writing, and math (Bradley-Johnson, 1999). For this study, the interventionist only used subtest relating to reading fluency. The Oral Reading subtest of the CIBS-R is available in two different forms with passages starting at a pre-primer level and continuing to a ninth grade level. A student's reading level is determined when a student reaches the highest level at which he/she can read a passage with 97% accuracy (Bradley-Johnson, 1999).

Aimsweb is a web-based tool for screening and progress monitoring students in grades K-12. Aimsweb provides CBMs in oral reading fluency, maze reading comprehension, spelling,

and written expression. CBMs for oral reading fluency on Aimsweb are a tool to monitor

progress in a valid, efficient, inexpensive way (Christ, Zopluoglu, Long, & Monaghen, 2012).

Aimsweb provides teachers with various probes on grade levels K-8 to assess reading fluency.

Teachers can print out a probe on a specific grade level and administer the probe to a student.

Reading fluency probes must be administered individually and require the teacher to time a

student for one minute as he/she reads the probe aloud. The teacher marks any mistakes the

student makes on the teacher copy and at the end of the one minute counts the number of words

read correctly. Aimsweb provides administration manuals for teachers to help determine what

constitutes a reading error. After the probe has been administered, teachers can look at the norm

tables provided on the Aimsweb website to determine at what percentile the student reads in and

set goals based on given rate of improvements. Aimsweb's reading fluency CBMs allow teachers

to plot data points and graph data (Christ et al., 2012). Three or more data points above or below

an aim line can show that either growth is insufficient and the intervention needs to be changed

or that growth is excessive and the goal needs to be changed (Christ et al., 2012).

Data Collection

Data were collected during pre- and post-test phases, as well as weekly during the

baseline and intervention phases. In the pre-test phase, the CIBS-R Oral Reading subtest Form A

was administered individually to each student. A reading level was determined for each student

based on the highest level he/she read with 97% accuracy. Aimsweb probes were also

administered individually to each student until a stable baseline of at least three data points was

established. Once weekly during the intervention phase, students were individually administered

Aimsweb reading fluency CBM probes on the grade level determined by the administration of

the CIBS-R. Upon completion of the intervention phase, the CIBS-R Oral Reading subtest Form

B was administered individually to each student. A reading level was determined for the post-test phase in the same way as it was during the pre-test phase, based on the highest level the student read with 97% accuracy. Three additional Aimsweb probes were also administered following completion of the intervention phase.

Implementation

Once students were identified as possible participants, consent forms (see Appendix A) were sent to parents and guardians via the student for permission to participate in the study. The interventionist called parents/guardians on the day consent forms were sent home and explained information on the consent forms. Students who returned parental consent forms were then given assent forms (see Appendix B). The interventionist explained the assent forms to the students individually and had them sign, if appropriate. The interventionist also explained the consent form to and obtained a signed consent form (see Appendix C) from the speech language pathologist who served as the independent observer for the study.

Pre-test data were collected once parental consent and student assent were obtained. To gather pre-test data, the interventionist individually administered the CIBS-R Oral Reading Subtest Form A. The CIBS-R Oral Reading Subtest Form A was administered by the interventionist at a table in the back of the students' classroom during the language arts class period. Students were individually asked to join the interventionist at the table and read a selection. All students began reading at the kindergarten reading passage and continued to read each grade level passage until they scored below 97% accuracy. A student's reading level was determined by selecting the highest passage at which he/she read with 97% accuracy. Based on the reading level obtained from the CIBS-R, the interventionist individually administered an oral reading CBM from Aimsweb. Aimsweb CBMs were administered the day after CIBS-R testing

was completed. CBMs were given by the interventionist in the special education classroom during the language arts class period. Students were asked individually to join the interventionist at a table in the back of the room. Each student was asked to read a passage that corresponds to the grade level determined by the CIBS-R administration. Students had one minute to read as much of the passage as possible. The interventionist started the timer when the student read the first word. As the student read, the interventionist marked each word that was read incorrectly. Oral reading CBMs were administered for a minimum of 3 data points or until data were stable within 50% of the mean in order to establish a baseline (Alberto & Troutman, 2009). Once a stable baseline was established, intervention began.

Once the baseline phase was completed the intervention phase began and participants received daily instruction for 45-60 minutes using Corrective Reading Decoding during their English Language Arts class period. Instruction with the intervention was provided by the interventionist daily. The interventionist was trained by SRA (the developers of Corrective Reading) to teach and train teachers to teach Corrective Reading and followed a fidelity checklist (see Appendix D) designed to ensure that the intervention was implemented as intended by SRA. The checklist was reviewed by the interventionist before each intervention session and was filled out after each intervention session was complete.

Instruction took place in two separate reading groups, Decoding B1 and Decoding B2, based on the participants' Corrective Reading Decoding placement tests. Decoding B1 consisted of two students, Chasity and Carolyn. Decoding B2 consisted of Nick, Christian, Alex and Danielle. Students were called by the interventionist one group at a time to the back table to participate in instruction with the intervention. While the interventionist was working with one group, the other group was working in stations on IEP goals and objectives.

Each lesson in Corrective Reading Decoding is comprised of four parts: 1) Word-Attack Skills, 2) Group Reading, 3) Individual Reading Checkouts, and 4) Workbook Exercises (Engelmann et al., 1999). Word-attack skills take 10 minutes to complete and allow students to practice identifying letter sounds and combinations, and pronouncing and reading isolated words composed of learned letter sounds and combinations. Group reading follows word-attack skills and should take 15 to 20 minutes to complete. During group reading, students take turns reading aloud from a passage. Students who are not reading aloud are expected to follow along by tracking. Individual reading checkouts begin in lesson six and are completed after group reading. Individual reading checkouts last approximately 10 minutes and require students to read two passages to the teacher for the fluency assessment. Students first read the passage from the current story to the teacher aloud. This reading is untimed. Students then read the passage from the preceding story to the teacher aloud. The second reading is timed and students must read within a specified error limit (for example, students must read 85 words in 1 minute, with no more than 2 errors). The last part of daily instruction, workbook exercises, takes about 10 minutes and requires students to complete activities important to student skill development. Workbook activities are comprised of some activities that are teacher directed and some independent. Students must stay within a specific error limit when completing workbook exercises. If a student exceeded the error limit, he/she did not receive all of the points possible for the workbook and worked one on one with the interventionist to correct his/her mistakes while the other students who did not exceed the error limit read independently at their desk.

During the intervention phase, the interventionist administered reading fluency CBMs from Aimsweb after each five lessons (once a week). The CBMs were individually administered by the interventionist at the back table of the classroom after every fifth lesson was completed.

Intervention continued until all lessons of the Corrective Reading Decoding level were completed. Upon completion of the intervention, post-test data were collected. The interventionist individually administered the CIBS-R Oral Reading Subtest Form B. The interventionist then individually administered reading fluency CBMs from Aimsweb for three additional data points.

Data Analysis

Data were analyzed to record the effect of Corrective Reading Decoding on the reading fluency skills of students with MID. By using a pre/post-test A/B design, educators can demonstrate the effectiveness of an intervention if a behavior improves from baseline to intervention phases (Gay et al., 2006). Although this design is subject to internal and external validity threats it is a common educational practice and can still be used by educators to make decisions regarding effectiveness of interventions (Gay et al., 2006). Reading fluency was measured by scoring students' reading data on pre- and post- test measures of the CIBS-R, and pre-, during, and post-intervention measures of Aimsweb CBMs, as previously detailed. Data were graphed in order to allow the interventionist visually analyze data in order to properly interpret the findings (McMillan & Schumacher, 2010). Graphing data allowed the interventionist to easily visually analyze the distribution of scores (Gay, Mills, & Airasian, 2006). If the data showed an increase in grade level reading fluency on the CIBS-R and/or percentile ranking on Aimsweb reading fluency CBMs from pre- to post- tests, then the intervention was considered to have a positive effect on the reading fluency skills for the students with MID who had an increase in their reading fluency scores.

Fidelity

A fidelity checklist (see Appendix D) with a detailed analysis of the steps to be taken during each intervention session was used to collect data on fidelity for the Corrective Reading Decoding instructional periods. The interventionist who implemented Corrective Reading was trained by SRA in how to teach and train others to teach Corrective Reading. The interventionist developed the fidelity checklist to be followed during intervention time based on the guidelines set forward by SRA for teaching Corrective Reading. The interventionist reviewed the fidelity checklist before each intervention session and filled out the checklist after each intervention session was complete. Fidelity was calculated by determining the percentage of steps completed correctly for each session. Fidelity for Corrective Reading Decoding B1 was 98% and Decoding B2 was 96%.

Reliability

The speech language pathologist was trained to collect reliability data by the school system for progress monitoring purposes. The interventionist explained the process of data collection using Aimsweb for the purposes of this study prior to data collection. The speech language pathologist served as an independent observer. The interventionist recorded audio of the students' weekly Aimsweb CBM fluency readings. The independent observer analyzed each student's weekly CBM reading fluency probes by marking words that were read incorrectly in order to determine how many words were read correctly in one minute. During the study, inter-rater reliability was calculated using point by point agreement between the interventionist and independent observer.

Chasity. During the baseline phase, the speech language pathologist and the interventionist reached a 67% agreement for Chasity's first three consecutive probes. The speech

language pathologist reached an 86% agreement with the interventionist for Chasity's probes during the intervention phase. The speech language pathologist and the interventionist reached a 100% agreement for Chasity's last three probes.

Nick. During the baseline phase, the speech language pathologist and the interventionist reached a 100% agreement for Nick's first three consecutive probes. The speech language pathologist reached an 86% agreement with the interventionist for Nick's probes during the intervention phase. The speech language pathologist and the interventionist reached a 100% agreement for Nick's last three probes.

Christian. During the baseline phase, the speech language pathologist and the interventionist reached a 33% agreement for Christian's first three consecutive probes. The speech language pathologist reached a 71% agreement with the interventionist for Christian's probes during the intervention phase. The speech language pathologist and the interventionist reached a 67% agreement for Christian's last three probes.

Carolyn. During the baseline phase, the speech language pathologist and the interventionist reached a 67% agreement for Carolyn's first three consecutive probes. The speech language pathologist reached an 86% agreement with the interventionist for Carolyn's probes during the intervention phase. The speech language pathologist and the interventionist reached a 100% agreement for Carolyn's last three probes.

Alex. During the baseline phase, the speech language pathologist and the interventionist reached a 100% agreement for Alex's first three consecutive probes. The speech language pathologist reached an 86% agreement with the interventionist for Alex's probes during the intervention phase. The speech language pathologist and the interventionist reached a 67% agreement for Alex's last three probes.

Danielle. During the baseline phase, the speech language pathologist and the interventionist reached a 67% agreement for Danielle's first three consecutive probes. The speech language pathologist reached an 86% agreement with the interventionist for Danielle's probes during the intervention phase. The speech language pathologist and the interventionist reached a 100% agreement for Danielle's last three probes.

Results

Chasity

CIBS-R. In the pre-test phase, Chasity's scores on the CIBS-R Oral Reading subtest Form A placed her at an upper first grade level. In the post-test phase, Chasity's scores on the CIBS-R Oral Reading subtest Form B placed her at an upper second grade level. Table 1 shows CIBS-R results data for Chasity.

Aimsweb Probes. Figure 1 shows the graphed data for Chasity. During the baseline phase, Chasity's scores ranged from 39 to 45 words per minute with a mean score of 42 words per minute on second grade reading CBM probes. The mean score of 42 words per minute placed her at the 31st percentile at a second grade level, according to the Aimsweb national norms table. During the intervention phase, Chasity's scores ranged from 43 to 68 words per minute with a mean score of 56 words per minute on second grade reading CBM probes. The mean score of 56 words per minute placed her at the 43rd percentile at a second grade level, according to the Aimsweb national norms table. During the maintenance phase, Chasity's scores ranged from 48 to 58 words per minute with a mean score of 53 words per minute on second grade reading CBM probes. The mean score of 53 words per minute placed her at the 40th percentile at a second grade level, according to the Aimsweb national norms table.

Nick

      CIBS-R. In the pre-test phase, Nick's scores on the CIBS-R Oral Reading subtest Form

A placed him at an upper third grade level. In the post-test phase, Nick's scores on the CIBS-R

Oral Reading subtest Form B placed him at a fifth grade level. Table 1 shows CIBS-R results

data for Nick.

      Aimsweb Probes. Figure 2 shows Nick's graphed data. During the baseline phase,

Nick's scores ranged from 54 to 72 words per minute with a mean score of 65 words per minute

on fourth grade reading CBM probes. The mean score of 65 words per minute placed him at the

12st percentile at a fourth grade level, according to the Aimweb national norms table. During the

intervention phase, Nick's scores ranged from 65 to 81 words per minute with a mean score of

72 words per minute on fourth grade reading CBM probes. The mean score of 72 words per

minute placed him at the 16th percentile at a fourth grade level, according to the Aimsweb

national norms table. During the maintenance phase, Nick's scores ranged from 77 to 87 words

per minute with a mean score of 82 words per minute on fourth grade reading CBM probes. The

mean score of 82 words per minute placed him at the 23rd percentile at a fourth grade level,

according to the Aimsweb national norms table.

Christian

      CIBS-R. In the pre-test phase, Christian's scores on the CIBS-R Oral Reading subtest

Form A placed him at an upper first grade level. In the post-test phase, Christian's scores on the

CIBS-R Oral Reading subtest Form B placed him at an upper second grade level. Table 1 shows

CIBS-R results data for Christian.

      Aimsweb Probes. Figure 3 shows Christian's graphed data. During the baseline phase,

Christian's scores ranged from 68 to 97 words per minute with a mean score of 78 words per

minute on second grade reading CBM probes. The mean score of 78 words per minute placed

him at the 67st percentile at a second grade level, according to the Aimsweb national norms table.

During the intervention phase, Christian's scores ranged from 59 to 93 words per minute with a

mean score of 77 words per minute on second grade reading CBM probes. The mean score of 77

words per minute placed him at the 66th percentile at a second grade level, according to the

Aimsweb national norms table. During the maintenance phase, Christian's scores ranged from 73

to 94 words per minute with a mean score of 81 words per minute on second grade reading CBM

probes. The mean score of 81 words per minute placed him at the 69% percentile at a second

grade level, according to the Aimsweb national norms table.

Carolyn

      CIBS-R. In the pre-test phase, Carolyn's scores on the CIBS-R Oral Reading subtest

Form A placed her at an upper first grade level. In the post-test phase, Carolyn's scores on the

CIBS-R Oral Reading subtest Form B placed her at a lower third grade level. Table 1 shows

CIBS-R results data for Carolyn.

      Aimsweb Probes. Figure 4 shows Carolyn's graphed data. During the baseline phase,

Carolyn's scores ranged from 36 to 54 words per minute with a mean score of 47 words per

minute on second grade reading CBM probes. The mean score of 47 words per minute placed her

at the 35th percentile at a second grade level, according to the Aimsweb national norms table.

During the intervention phase, Carolyn's scores ranged from 45 to 70 words per minute with a

mean score of 56 words per minute on second grade reading CBM probes. The mean score of 56

words per minute placed her at the 43rd percentile at a second grade level, according to the

Aimsweb national norms table. During the maintenance phase, Carolyn's scores ranged from 57

to 62 words per minute with a mean score of 59 words per minute on second grade reading CBM

probes. The mean score of 59 words per minute placed her at the 46th percentile at a second grade level, according to the Aimsweb national norms table.

Alex

CIBS-R. In the pre-test phase, Alex's scores on the CIBS-R Oral Reading subtest Form A placed him at an upper third grade level. In the post-test phase, Alex's scores on the CIBS-R Oral Reading subtest Form B placed him at a fifth grade level. Table 1 shows CIBS-R results data for Alex.

Aimsweb Probes. Figure 5 shows Alex's graphed data. During the baseline phase, Alex's scores ranged from 46 to 87 words per minute with a mean score of 64 words per minute on fourth grade reading CBM probes. The mean score of 64 words per minute placed him at the 11th percentile at a fourth grade level, according to the Aimsweb national norms table. During the intervention phase, Alex's scores ranged from 68 to 96 words per minute with a mean score of 84 words per minute on fourth grade reading CBM probes. The mean score of 84 words per minute placed him at the 25th percentile at a fourth grade level, according to the Aimsweb national norms table. During the maintenance phase, Alex's scores ranged from 80 to 90 words per minute with a mean score of 86 words per minute on fourth grade reading CBM probes. The mean score of 86 words per minute placed him at the 27th percentile at a fourth grade level, according to the Aimsweb national norms table.

Danielle

CIBS-R. In the pre-test phase, Danielle's scores on the CIBS-R Oral Reading subtest Form A placed her at an upper third grade level. In the post-test phase, Danielle's scores on the CIBS-R Oral Reading subtest Form B placed her at a fourth grade level. Table 1 shows CIBS-R results data for Danielle.

Aimsweb Probes. Figure 6 shows Danielle's graphed data. During the baseline phase, Danielle's scores ranged from 75 to 121 words per minute with a mean score of 107 words per minute on fourth grade reading CBM probes. The mean score of 107 words per minute placed her at the 50th percentile at a fourth grade level, according to the Aimsweb national norms table. During the intervention phase, Danielle's scores ranged from 89 to 129 words per minute with a mean score of 113 words per minute on fourth grade reading CBM probes. The mean score of 113 words per minute placed her at the 56th percentile at a fourth grade level, according to the Aimsweb national norms table. During the maintenance phase, Danielle's scores ranged from 113 to 127 words per minute with a mean score of 122 words per minute on fourth grade reading CBM probes. The mean score of 122 words per minute placed her at the 65th percentile at a fourth grade level, according to the Aimsweb national norms table.

Discussion

The purpose of this study was to add to the literature-base by evaluating the effects of Corrective Reading Decoding on the reading fluency skills of middle school students with mild ID. The results of this study show that Corrective Reading had a positive effect on the reading fluency skills of middle school students with mild ID. Specifically, the results support previous studies that have shown that students can gain up to 12 months of skills upon completion of a level of Corrective Reading Decoding (Flores & Ganz, 2007; Maggs & Murdoch, 1979; Przychodzin-Havis et al., 2005).

All of the participants in the current study increased at least one grade level on the CIBS-R, with some participants gaining two grade levels of reading fluency skills in just a four month period. Chasity and Christian both increased from an upper first grade reading level to an upper second grade reading level and Danielle increased from an upper third grade reading level to a

fourth grade reading level. Carolyn increased from an upper first to a lower third grade reading level, while Nick and Alex increased from an upper third to a fifth grade reading level. All of the participants increased their words per minute and percentile ranking on Aimsweb R-CBM probes and the Aimsweb national norms chart. Chasity increased from 42 words per minute and the 31st percentile on a second grade level to 53 words per minute and the 40th percentile on a second grade level. Nick increased from 65 words per minute and the 12th percentile on a fourth grade level to 82 words per minute and the 23rd percentile on the fourth grade level. Christian increased from 78 words per minute and the 67th percentile on a second grade level to 81 words per minute and the 69th percentile on a second grade level. Carolyn increased from 47 words per minute and the 35th percentile on a second grade level to 59 words per minute and the 46th percentile on a second grade level. Alex increased from 64 words per minute and the 11th percentile on a fourth grade level to 86 words per minute and 27th percentile on a fourth grade level. Danielle increased from 107 words per minute and the 50th percentile on a fourth grade level to 122 words per minute and the 65th percentile on a fourth grade level. The results of this study suggest that Corrective Reading Decoding is an effective intervention for teaching reading fluency skills to middle school students with mild ID and adds to the current body of literature on Corrective Reading by generalizing the findings to another student population (middle school students with MID) and setting (self-contained classrooms).

Limitations

There are several limitations that must be considered when examining the results of this study. One important limitation to note is that the last two data points during the intervention phase and the entire maintenance phase was taken after a two week break for Christmas vacation. This break led to a slight decrease in reading fluency as measured on the Aimsweb R-CBM

probes for the second to last data point during the intervention phase. Based on the decrease after

the break, the investigator decided to administer another R-CBM probe after the final lesson and

before the mastery test of the intervention to be included as the last data point for the

intervention session.

Chasity's scores decreased from her intervention mean to her maintenance mean. This

decrease could be attributed to her severe speech disorder. Chasity has a difficult time reading

unfamiliar text, as she has trouble remembering how to form the correct sounds for words. While

she was able to read the text during Corrective Reading instruction and pass the reading

checkouts, the checkouts were familiar text that had been previously read as a part of the

Decoding lesson. The R-CBM probes were unfamiliar texts that had never been read by Chasity.

Her scores suggest that speech and language disorders should be a factor when choosing an

appropriate reading intervention for students with speech deficits.

Christian's scores did not show as significant an increase as other participants' scores.

While all of the other participant's increased at least nine percentile ranks on R-CBM probes,

Christian only increased two percentile ranks. Christian's lack of growth may be attributed to his

frequent absence seizures. Absence seizures are characterized by a brief "trance-life" state during

which an individual will become unresponsive and will seem to be staring blankly (Solomon &

McHale, 2012). Absence seizures can occur many times throughout the day and can cause

students difficulties in following instructions, finishing schoolwork and responding when spoken

to (Agnew, Nystul, & Conner, 1998). Christian's absence seizures occurred on an almost daily

basis, which caused him to miss portions of instruction throughout the intervention phase. His

scores on the Aimsweb R-CBM probes may also not be an accurate representation of his reading

skills, as Aimsweb R-CBM probes are timed and Christian's seizures caused him to miss words

while he was reading the probes. However, his CIBS-R scores do show a significant increase in reading skills, from an upper first grade reading level to an upper second grade reading level.

The interventionist did have to make a few accommodations to the Corrective Reading Decoding lessons in order to allow the participants to meet the Corrective Reading guidelines. During the reading checkout portion of the lesson, participants were allowed multiple opportunities to pass the reading checkout guidelines specified by Corrective Reading. Corrective Reading specifies that students should continue reading checkouts until the checkouts are passed, however it is expected that students should be able to pass checkouts after the first attempt. Participants in this study required as many as three readings to complete the reading checkout guidelines specified by Corrective Reading.

Participants also had a difficult time completing workbook portions of the intervention independently. Almost every workbook lesson required participants to complete reading comprehension questions independently. After the first five lessons, participants were consistently failing the workbook portion and the interventionist determined that participants could not complete the reading comprehension portion independently. To accommodate for this limitation, the interventionist added a step to the group reading portion of the lesson. During group reading, Corrective Reading Decoding requires the teacher to ask reading comprehension questions following each portion of the group reading text. These reading comprehension questions are later reviewed in the workbook portion of the lesson. When the comprehension questions were asked during the group reading portion, the interventionist required the participants to underline the text which gave the answers. This step allowed the participants to then go back to the text during the workbook portion and find the already underlined answers in their text independently.

Implications for Practice

The results of this study show that Corrective Reading can have a positive effect on the reading fluency skills of students with MID. Teachers of students with MID can use this intervention in their classrooms to help students with MID achieve gains in reading fluency skills, but may need to make minor accommodations to the intervention in order to meet student needs. Students with MID may require multiple timed read checkouts in order to meet the specified criteria as outlined by SRA. Teachers should also be prepared to add a step during the group reading portion of the lesson in order to allow students to underline answers in their text. Underlining the text facilitates comprehension of material and allows students to complete workbook sections independently. Teachers beginning Corrective Reading with students with MID will need to plan for the extra time required to underline text during group reading and to allow each student multiple opportunities to pass timed reading checkouts. This extra time can cause the time for completion of a lesson of Corrective Reading to increase from the specified 45- 60 minutes by about 5 -15 minutes, depending on the number of students in the intervention group and the number of repeated readings needed per student.

Another area for consideration by teachers is determining the appropriateness of Corrective Reading for students with severe speech impairments. While Corrective Reading did increase the reading fluency skills of a student with a severe speech impairment in this study, it may not be appropriate for every student with a speech impairment. Teachers should make sure to study the requirements of the intervention before implementation and determine if the guidelines are feasible for the student with a speech impairment. If the intervention is determined to be appropriate, the teacher may need to carefully select the measures used to monitor reading fluency. Timed reading measures, such as Aimsweb, may not be the most appropriate measure

for assessing student progress in reading fluency if the student has severe difficulties in forming sounds and requires extra think time as a result of the speech impairment.

Future Research

Future research should be conducted in a similar setting and with similar participants in order to further extend the literature base in this particular area, as there has been no set curriculum for students with ID served in self-contained classrooms and interventions for students with ID have been limited (Knight et al., 2010). Wei (2011) studied growth trajectories for students with disabilities in 11 disability categories and found that while students with different disabilities have different starting and ending levels of reading, the growth curve (amount of growth) for all disability categories was similar. Wei's article (2011), along with the results of the current study, suggest that even though students with ID may not be able to achieve grade level reading skills, they can still benefit from the same instruction students with high incidence disabilities receive.

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Table 1

Pre/Post Test Data on CIBS-R and Aimsweb CBMs

Participant	CIBS-R Form A	CIBS-R Form B	Baseline Mean	Baseline Percentile	Intervention Mean	Intervention Percentile	Maintenance Mean	Maintenance Percentile
Chasity	Upper 1st	Upper 2nd	42 WPM	31st	56 WPM	43rd	53 WPM	40th
Nick	Upper 3rd	5th	65 WPM	12th	72 WPM	16th	82 WPM	23rd
Christian	Upper 1st	Upper 2nd	78 WPM	67th	77 WPM	66th	81 WPM	69th
Carolyn	Upper 1st	Lower 3rd	47 WPM	35th	56 WPM	43rd	59 WPM	46th
Alex	Upper 3rd	5th	64 WPM	11th	84 WPM	25th	86 WPM	27th
Danielle	Upper 3rd	4th	107 WPM	50th	113 WPM	56th	122 WPM	65th

Figure 1

Graphed Data for Chasity

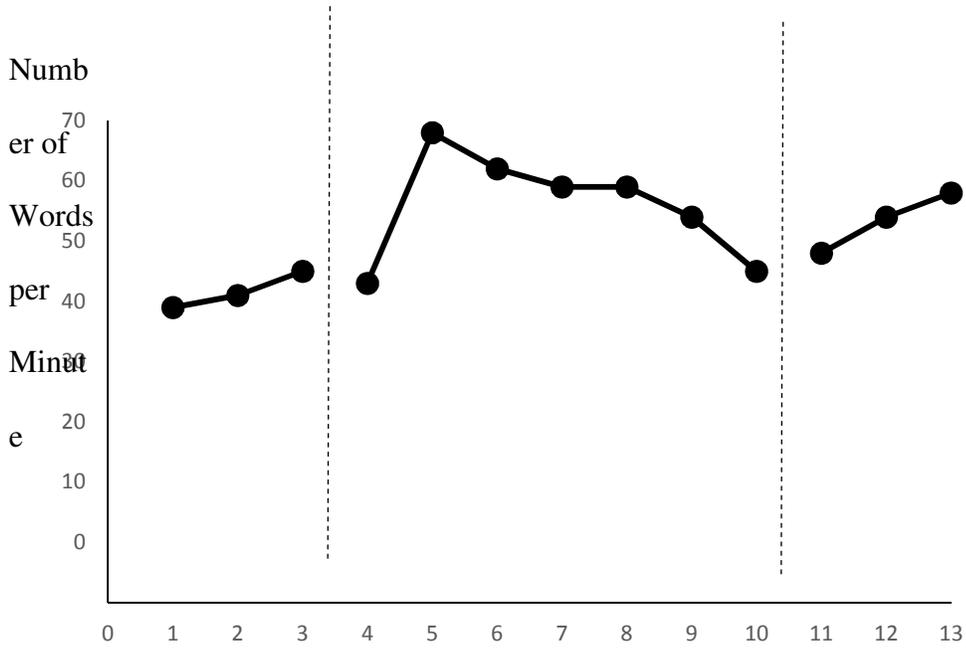Numb
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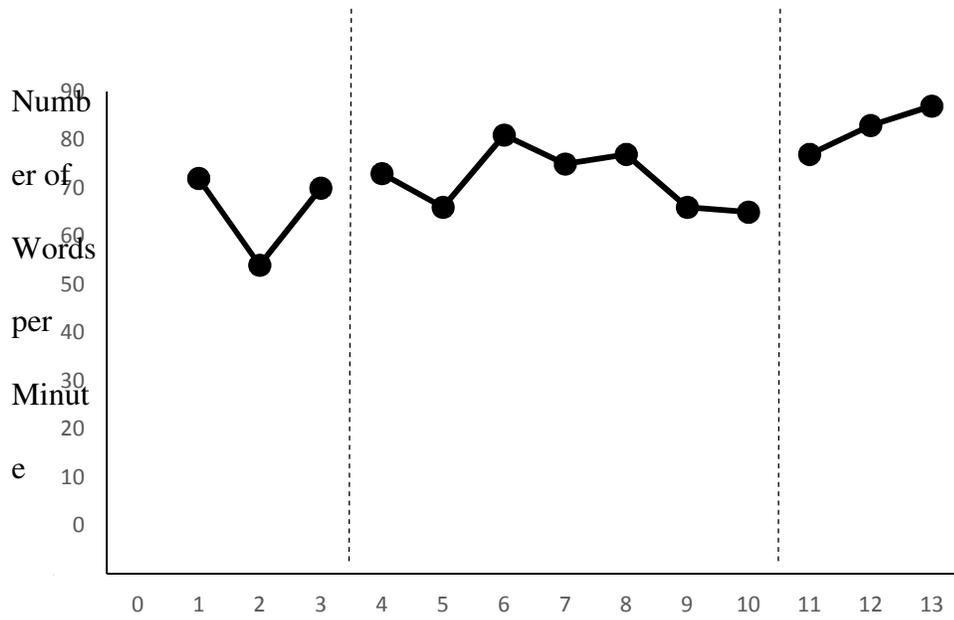
Figure 2

Graphed Data for Nick
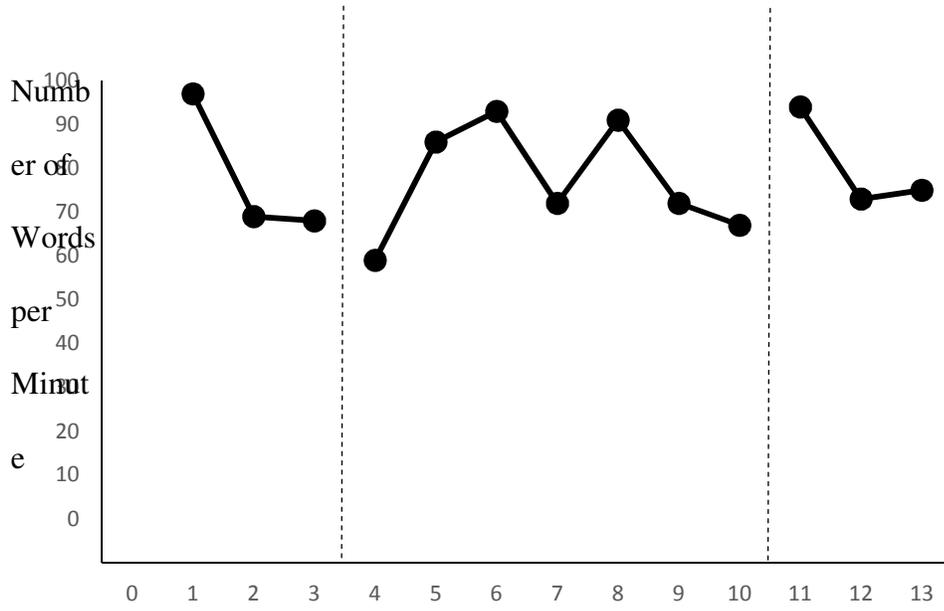
Figure 3

Graphed Data for Christian
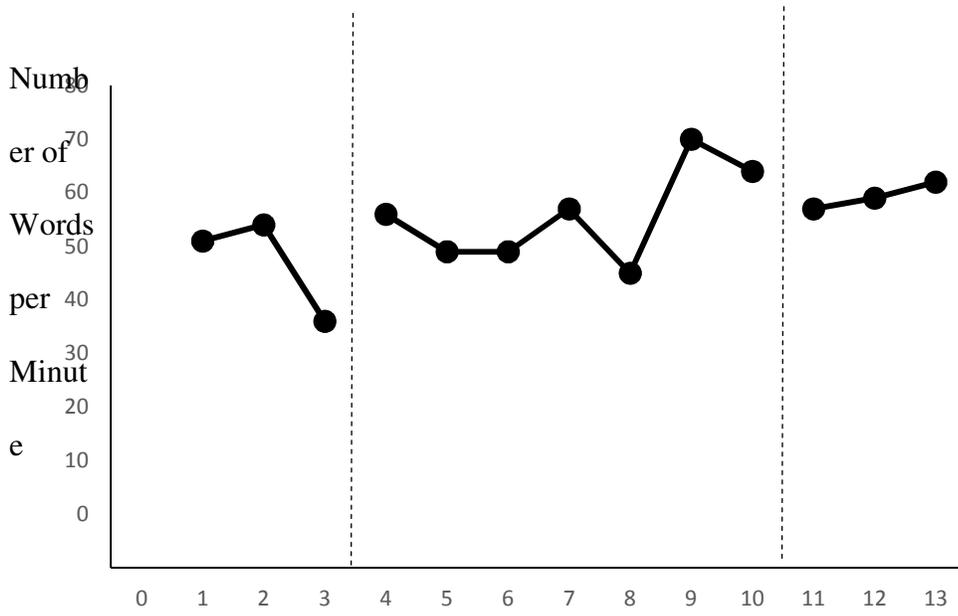
Figure 4

Graphed Data for Carolyn
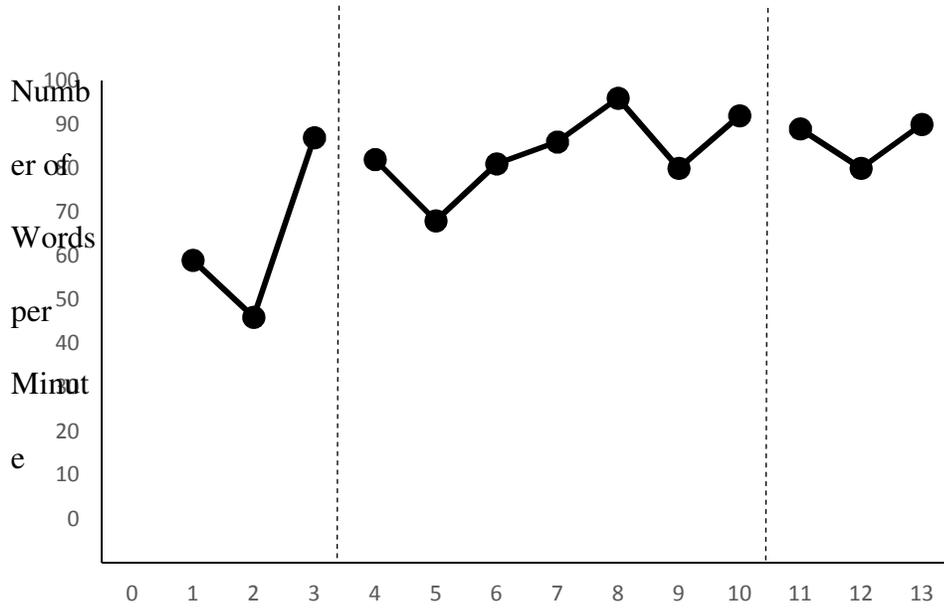
Figure 5
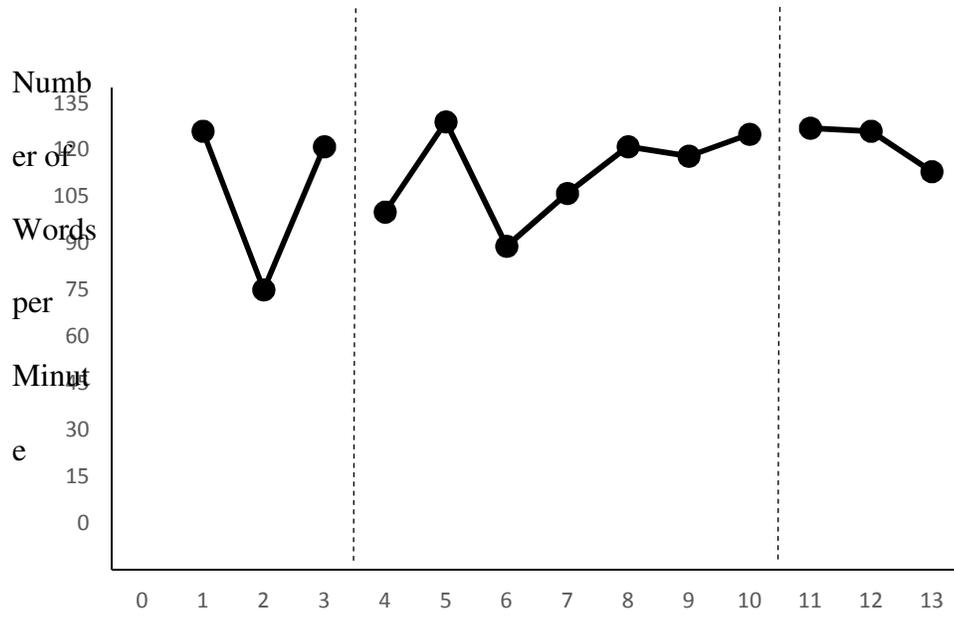
Graphed Data for Alex

Figure 6

Graphed Data for Danielle

Appendix A

IRB Parent/Guardian Consent Form

I, _____, give permission for my child, _____, to be a participant in the research "Effects of Corrective Decoding on the Reading Fluency Skills of Students with Mild Intellectual Disabilities," which is being conducted by Kate Long, who can be reached at 706-863-2275. I understand that my child's participation is voluntary and students will receive the instruction regardless of participation in the study; I can withdraw my consent at any time. If I withdraw my consent, my child's data will not be used as part of the study and will be destroyed.

The following points have been explained to me:

1. The purpose of this study is to add to the literature base by evaluating the effects of Corrective Reading Decoding on the reading fluency skills of middle school students with intellectual disabilities. The implementation of the intervention, Corrective Reading Decoding, will answer the following research question: What effect does Corrective Reading Decoding have on the reading fluency skills of students with mild intellectual disabilities?
2. The procedures are as follows: my child will be asked to participate in a pre- and post-tests using the Brigance Comprehensive Inventory of Basic Skills Oral Reading sub-test, as well as weekly reading fluency measures. My child will also be asked to participate in daily reading fluency instruction using Corrective Reading Decoding.
3. You will be asked to sign two identical consent forms. You must return one form to the investigator before the study begins, and you may keep the other consent form for your records.
4. My child may find that some questions are invasive or personal. If your child becomes uncomfortable answering any questions, he or she may cease participation at that time.
5. Your child will not likely experience physical, psychological, social, or legal risks beyond those ordinarily encountered in daily life or during the performance of routine examinations or tests by participating in this study.
6. Your child's individual responses will be confidential and will not be release in any individually identifiable form without your prior consent unless required by law.
7. The investigator will answer any further questions about the research (see above telephone number).
8. In addition to the above, further information, including a full explanation of the purpose of this research, will be provided at the completion of the research project on request.

_____

Signature of Investigator   Date

_____

Signature of Parent or Guardian   Date
(If participant is less than 18 years of age)

Appendix B

IRB Minor Assent Form

I, _____, agree to participate in the
research "Effects of Corrective Decoding on the Reading Fluency Skills of Students with Mild
Intellectual Disabilities," which is being conducted by Kate Long, who can be reached at 706-
863-2275.I understand that my participation is voluntary; I can stop at any time. If I withdraw
my consent, my data will not be used as part of the study and will be destroyed.

The following points have been explained to me:

1.   I will be asked to read to my teacher before and after the reading instruction starts and
      finishes and once a week during reading instruction. I will also be asked to participate
      in reading instruction once a day.
2.   My name will not be on the data sheet.
3.   I will be asked to sign two identical consent forms. One form must be returned to my
      teacher before the study begins, and I can keep the other consent form.
4.   If I become uncomfortable answering any questions, I can stop participating at that
      time.
5.   I am not putting myself in any more physical, psychological, social, or legal danger
      than I would ordinarily encountered in daily life or during the performance of routine
      examinations or tests.
6.   My information will be kept secret, and no one will know that the answers or results
      are mine, unless I tell them.
7.   If I have any questions about this research, I can ask my teacher at any time.
8.   If I want to know more about the research, I can ask my teacher for more information.

_____
Signature of Investigator   Date

_____
Signature of Minor Participant   Date

Research at Georgia College & State University involving human participants is carried out
under the oversight of the Institutional Review Board. Address questions or problems regarding
these activities to Mr. Marc Cardinalli, Director of Legal Affairs, CBX 041, GCSU, (478) 445-
2037

Appendix C

IRB Consent Form

I, _____, agree to participate in the research "Effects of Corrective Decoding on the Reading Fluency Skills of Students with Mild Intellectual Disabilities," which is being conducted by Kate Long, who can be reached at 706-863-2275. I understand that my participation is voluntary; I can withdraw my consent at any time. If I withdraw my consent, my data will not be used as part of the study and will be destroyed.

The following points have been explained to me:

1.   The purpose of this study is to add to the literature base by evaluating the effects of Corrective Reading Decoding on the reading fluency skills of middle school students with intellectual disabilities. The implementation of the intervention, Corrective Reading Decoding, will answer the following research question: What effect does Corrective Reading Decoding have on the reading fluency skills of students with mild intellectual disabilities?

2.   The procedures are as follows: you will be asked to collect and analyze weekly fluency data and analyze information gathered from pre- and post-tests to assess trends in student performance.

3.   You will not list your name on the data sheet. Therefore, the information gathered will be confidential.

4.   You will be asked to sign two identical consent forms. You must return one form to the investigator before the study begins, and you may keep the other consent form for your records.

5.   You may find that some questions are invasive or personal. If you become uncomfortable answering any questions, you may cease participation at that time.

6.   You are not likely to experience physical, psychological, social, or legal risks beyond those ordinarily encountered in daily life or during the performance of routine examinations or tests by participating in this study.

7.   Your individual responses will be confidential and will not be release in any individually identifiable form without your prior consent unless required by law.

8.   The investigator will answer any further questions about the research (see above telephone number).

9.   In addition to the above, further information, including a full explanation of the purpose of this research, will be provided at the completion of the research project on request.

_____

Signature of Investigator   Date

_____

Signature of Participant   Date

_____

Research at Georgia College & State University involving human participants is carried out under the oversight of the Institutional Review Board. Address questions or problems regarding these activities to Mr. Marc Cardinalli, Director of Legal Affairs, CBX 041, GCSU, (478) 445-2037

Appendix D

Fidelity Checklist

Number	Yes	No	Step Description
1.			**Did the teacher follow the script to ensure a smooth and precise presentation by reading only the writing in blue and following the directions presented in the parentheses?**
2.			**If the student(s) made an error, did the teacher provide a correction procedure immediately following the error?**
3.			**If a correction procedure was provided, did the teacher provide the correct correction procedure (either the general correction procedure or one of the specified correction procedures)?**
4.			**Did the teacher provide signals when directed by the script?**
5.			**If signals were provided when directed, did the teacher use the rules for effective signaling?** 1) **Never signal while talking; talk first, then signal** 2) **The time interval between the last word of the instruction and the signal should always be about 1 second. Signals should be consistently timed so that students can respond together.**
6.			**Did the teacher provide positive reinforcement (via points) throughout to encourage academic engagement throughout the intervention session?**
7.			**Did the teacher complete all of the components of the lesson in the correct order?** 1) **Word-attack skills** 2) **Group reading activities (fluency assessment)** 3) **Individual reading checkouts (fluency assessment)** 4) **Workbook exercises**