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Effect of a Parent Reading Intervention on Elementary-Aged Children's Reading Fluency

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by

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To my father, Gary Corbett,

for modeling all that is truly important in life.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Effect of a Parent Reading Intervention on Elementary-Aged Children's Reading Fluency

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ABSTRACT

This study examined the effect of a parent-implemented reading intervention on children's reading fluency. Five elementary school students identified as at-risk for reading failure participated in the study with their mothers. Baseline data for each student was collected before parents were trained by the researcher in implementation of the intervention procedure. Parents implemented the intervention four times per week for five weeks, while the researcher continued to collect assessment data twice per week. Follow-up data were then collected for each student two weeks after the intervention ended. The effects of the intervention were evaluated using a multiple baseline across participants design. Reading fluency was measured using Curriculum-Based Measurement of reading fluency (CBM-R) Results showed that three students had decreasing trends during baseline, but showed increases in reading fluency scores during the intervention and follow-up phases. A fourth student's scores during intervention and follow-up showed improvement over baseline scores, but with decreasing trends. The fifth student showed little change between baseline and intervention phases. Treatment integrity and social validity data also were collected. Integrity data indicated some

variability in parents' implementation of the intervention, while social validity data revealed that parents and students liked the intervention program and found it helpful.

CHAPTER ONE

INTRODUCTION

Statement of the Problem

Literacy is a growing national concern, justified by statistics reporting that 37% of fourth-grade students and 26% of eighth-grade students are reading below grade level (National Assessment of Educational Progress, 2003). The National Reading Panel (2000) indicated that over 17.5% of children will have reading problems within their first three years of school. Even more disturbingly, 75% of children who have reading problems in the third grade will continue to struggle with reading in the ninth grade (Lyon, 1995). Many researchers state that students who are poor readers in early elementary are likely to always struggle with reading (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Good, Simmons, & Smith; 1998; Juel, 1988; Torgesen & Burgess, 1998). Additionally, lack of reading skills has been correlated with other negative long-term outcomes including school dropout, unemployment, and adjudication (Cornwall & Bawden, 1992; Werner, 1993).

With an increased awareness of current reading problems and related outcomes, recent federal and state legislation (e.g., No Child Left Behind Act, NCLB) has been designed to address prevention of these problems and to implement early and effective interventions (United States Department of Education, 2004b). In addition to a focus on reading achievement, this legislation has identified parental involvement as a key factor in student success and requires that schools observe several important provisions for

involving parents. For example Title I schools must provide training to educate staff on how to work with parents as partners in their children's education and are encouraged to provide family literacy programs (Department of Education, 2004).

Thus, parent involvement is no longer an optional activity. Rather than focusing on compliance with the law, however, schools need to use these legislative guidelines to strive for excellence, recognizing that family involvement is essential for student learning and success. Current research provides evidence that family involvement directly relates to student achievement, and demonstrates evidence-based practices for effective programs, interventions and strategies to promote both family involvement and reading achievement. By implementing effective research-based interventions and programs, schools may be able to increase family involvement and decrease the current problem of reading failure among elementary-aged students.

Parent Involvement in Reading Interventions

There is conclusive evidence in the literature that indicates that parent involvement has a major influence on children's academic achievement (Epstein, 2002; Henderson & Mapp, 2002). More specifically, parent involvement in reading with their children has been researched extensively, with consistent findings that educational benefits are enhanced when families engage in reading activities (Epstein, 1996; Payne, Whitehurst, & Angell, 1994; Storck & Whitehurst, 2001). Parent tutoring in reading has shown to be a particularly beneficial intervention for struggling readers, showing greater gains than either peer tutoring (Topping & Whiteley, 1990) or teacher tutoring (Tizard, Schofield, Hewison, 1982). In addition to greater academic gains, Gang and Poche (1982) suggest the following benefits of parent tutoring interventions over other forms of

remediation: cost-effectiveness; convenience of in-home intervention; potential for benefiting other children in the family with reading difficulties; and avoidance of the child being removed from the classroom, thus preventing missed classroom opportunities or stigmatization.

With appropriate training and support, parents can be effectively involved in academic interventions (Fiala & Sheridan, 2003; Galloway & Sheridan, 1994; Persampieri, Gortmaker, Daly, Sheridan, & McCurdy, 2006). However, many parents do not know how reading instruction should be delivered or how to assist their child's learning effectively, and many feel inadequate in trying to help their children academically (Fiala & Sherdian, 2003; Persampieri et al., 2006; Wolfendale, Topping, & Hewison, 1986). The current study provided parents with training on effective implementation of a reading fluency intervention.

Theoretical Framework

The framework for the current study was guided by Holdaway's (1979) developmental learning theory which addresses four processes that enable learners to become literate. These processes are observation (i.e., seeing others read or being read to); collaboration with others who provide encouragement and help; practice (i.e., trying what has been learned); and performance, in which the learner demonstrates what s/he has learned and seeks feedback from others. The processes involved in this developmental learning theory for literacy were evidenced in the current study, which provided parents the opportunity to be involved with an intervention to improve students' reading fluency.

Purpose of the Study

Current legislation exists that requires schools to increase family involvement, alter the academic plans of students who are struggling with reading, and improve parent training (NCLB). These requirements are supported by current research that indicates that family involvement is related to academic achievement (e.g., Henderson & Mapp, 2002), and that reading fluency can be improved with evidence-based interventions and strategies (e.g., Shapiro 2004). While research exists demonstrating the efficacy of parent reading interventions, these research studies do not appear to match the intervention to the child's specific reading skill deficit. Instead, most investigators in this area appear to select or develop a strategy and implement it with a group of participants that has been selected based on criteria other than a specific reading skill deficit. For example, a parent involvement reading intervention might be applied to all students in a school, despite differences in abilities or skill deficits (Hannon, 1987), or it might be implemented with struggling readers who have learning disabilities, without regard to specific skill deficits (Duvall, Delquadri, Elliott & Hall, 1992; Mastropieri & Scruggs, 1997). Even if specific reading skills were assessed in a study, the selected intervention was applied across all participants, despite differences in skill deficits (Gang & Poche, 1982).

The purpose of the current study was to examine the effect of a parent-implemented reading fluency intervention on the reading fluency of elementary school students who were demonstrating difficulty with this specific skill. Assessments were conducted to identify fluency as the primary skill deficit. The students in this study attended a Charter school which serves students in kindergarten through 4th grade. The

school primarily serves students with a history of frequent out-of-school suspensions and/or expulsions, and 75.4% of the population is considered economically disadvantaged. The student population is predominantly African American (98.3%).

Hypothesis and Research Questions

This study was designed to address the following hypothesis: Students who receive a parent reading intervention designed to improve fluency will show an increase in reading fluency skills, as measured by Curriculum Based Measures (CBM). The following research questions were addressed in this study:

1. Will elementary students receiving the parent reading intervention show an increase in reading fluency skills, as measured by CBM, compared to baseline scores on these measures?
2. To what extent do participating parents find the parent reading intervention effective?
3. What qualities of the parent reading intervention do these parents perceive to be most helpful?
4. What do these parents consider to be the perceived barriers in implementing this intervention as it was designed?
5. To what extent do student participants find the parent reading intervention effective?

Significance of the Study

Difficulties in reading are common among our early elementary students. A recent study of a large national sample revealed that less than one third of fourth grade students read proficiently on grade level (National Center for Education Statistics; NCES

2005). Poor early literacy skills are associated with difficulty in acquisition of more complex reading skills in later grades. The "Matthew Effect" describes the phenomena in which children who struggle with initial reading skills tend to acquire subsequent skills more slowly than peers (Stanovich, 1986), as poor readers develop greater stress and fear of failure compared to good readers. As these negative associations with reading increase for poor readers, enjoyment of reading and engagement in reading activities decrease, perpetuating the phenomena (Topping & Lindsay, 1992). Thus, these children tend to fall consistently further behind their peers as reading skills increase in complexity. Additionally, reading difficulties are associated with problems in other academic areas and with difficulties in other areas of their lives outside of and beyond school (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1994; Stanovich, 1986; Torgesen & Burgess, 1998). Thus, it is important to develop effective interventions and implement them early to help these struggling readers. Strategies, such as the parent reading intervention implemented in this study, need to be evaluated for effectiveness to determine their value in terms of cost and benefit.

Definition of Terms

Reading fluency. Reading fluency is defined as the number of words read correctly in one minute (Shinn, 1998).

Struggling readers. Struggling readers are identified as those students who do not demonstrate reading fluency in current grade level materials.

Reading accuracy. Reading accuracy is defined as the number/percentage of words read correctly (Shinn & Shinn, 2002).

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

Overview

Our nation is currently facing a serious literacy problem, with research indicating that many students are not meeting grade level expectations in reading (NAEP, 2005). Awareness of this problem in recent years has spawned legislation, such as No Child Left Behind, to address the issue. Such legislature encourages, even demands, the development and use of evidence-based practices to help children learn to read.

Current literature identifies effective interventions for improving reading skills. Specific interventions are designed to address specific reading skill deficits. For example, Guided Repeated Reading is an intervention designed to address fluency problems. The literature also provides evidence that parental involvement benefits children across a multitude of school-related variables. Comprehensive programs have been designed to involve parents in their children's learning, including structured programs specifically designed to improve the literacy skills of elementary school students.

This literature review will further discuss the current literacy problem that our nation is facing, and the legislation that has been implemented to address it. The review will then address the importance of reading fluency and will discuss the literature related to Guided Repeated Reading interventions designed to improve fluency. Finally, it will

focus on those programs that concentrate on structured parent-delivered reading interventions.

A Multilevel Problem

Our nation is currently facing a serious literacy problem, with 36% of fourth grade students and 27% of eighth grade students reading below a basic achievement level (NAEP, 2005). Not obtaining this achievement level indicates that these students have not reached even partial mastery of prerequisite reading knowledge or skills. Only 31% of fourth grade students are reading at or above a proficient level, mastering grade level expectations in reading (NAEP, 2005). Statistics in the state of Florida are similar to the national level, with 35% of fourth and 34% of eighth grade students reading below a basic achievement level and only 30% of fourth grade and 25% of eighth grade students at or above a proficient achievement level.

Membership in specific groups appears to have a significant effect on reading achievement levels. For example, for students who are at-risk due to poverty, as indicated by eligibility for free or reduced school lunch, the statistics are even more daunting. Nationally, 54% of these fourth grade students are below basic achievement level, while only 15% are at or above proficiency. Membership in a minority culture results in similar statistics, with 59% of Black fourth grade students and 56% of Hispanic 4^{th} grade students reading below the basic achievement level. The percentages of these students who read at or above the proficient level are also similar to the national percentage (13% of black students, 15% of Hispanic students) In contrast, 25% of White fourth grade students are reading below the basic level, while 40% are at or above the proficient level. There also appears to be some difference by gender, as 41% of male

fourth grade students and 34% of females are reading below basic level. These statistics indicate that there is a serious literacy problem among our students, overall, but membership in some groups (i.e., lower socio-economic status, minority culture, male) puts children even more at-risk for reading failure.

Children who struggle with reading in these early grades have difficulty acquiring more complex reading skills in later grades. Fletcher and Lyon (1998) report that 74% of students who were poor readers in 3rd grade continued to be poor readers in the ninth grade. The "Matthew Effect" describes the phenomena in which children who struggle with initial reading skills tend to acquire subsequent skills more slowly than peers (Stanovich, 1986). As poor readers develop greater stress and fear of failure, negative associations with reading increase for poor readers, and their enjoyment of reading and their engagement in reading activities decrease, perpetuating the phenomena (Stanovich, 1986; Topping & Lindsay, 1992). Thus, these children tend to fall consistently further behind their peers as reading skills increase in complexity.

Additionally, reading difficulties are associated with problems in other academic areas and with difficulties in other areas of students' lives (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1994; Stanovich, 1986; Torgesen & Burgess, 1998). Reading is the avenue through which students do most of their learning in the upper elementary, middle, and high school subjects – history, social studies, science, math, and other content areas (Lyon, 1998). Without this skill, children's general knowledge, spelling, writing and vocabulary suffer as well. Thus children's chances for academic and occupational success are limited when foundational reading skills are not developed. Longitudinal studies supported by the National Institute of Child Health and Human

Development (NICHD) indicate that early poor readers begin to show decreases in self-esteem, self-concept, and motivation to learn to read in elementary school, and very little potential for entering college by the time they are in high school, with limited opportunities for occupation after high school (Lyon, 1998). The NICHD reports that 10% to 15% of children who have difficulty reading eventually do not complete high school and only 2 % of children with reading difficulties eventually complete a four-year college program. Further, Anderson, Hiebert, Scott, and Wilkinson (1985) report that it is impossible for individuals to obtain excellence in high school and beyond if they do not have the ability to read.

Legislature and Movements to Address the Literacy Problem

In 2002, the President signed the No Child Left Behind ACT of 2001 (NCLB) into law. This legislature added programs that target reading to the Elementary and Secondary Education Act. These programs, Reading First and Early Reading First, were created to address the growing concerns about our nation's problems with literacy. Early Reading First specifically addresses the issue of school readiness for children entering kindergarten. This nationwide effort provides funds to local education agencies and organizations that serve at-risk children, from low SES families, to develop language, cognitive and early reading skills that will provide a foundation for school success (U.S. Department of Education, 2006). The Reading First initiative also is a nationwide effort to help students succeed in reading (U.S. Department of Education, 2004a; U.S. Department of Education, 2004b). This initiative, however, provides funding for states and local school districts to develop high quality and evidence based programs for

students in kindergarten through third grade. This initiative is intended to help the nation reach it's goal of having all children read on grade level by the third grade.

To further support the nation's academic goals, NCLB requires that schools develop ways to increase parental involvement in their child's education and in school improvements. This legislature has particular guidelines for Title 1 schools, or those schools that serve more students who are at risk for reading problems, based on the predominance of students who are members of lower SES families.

In order for educators and parents to help children succeed in reading, it is necessary to promote the development of important reading subskills. Fluency is one of the subskills of reading that has been identified as necessary for developing proficiency in reading (Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004; National Reading Council, 1998).

Reading Fluency

Reading fluency is the fast, accurate, and effortless or automatic reading of connected text (Chafouleas et al., 2004; Fuchs et al., 2001; Therrien, 2004). It is considered an automatic process that is carried out without immediate intention, conscious awareness or interference with other processes that are occurring simultaneously (NRP, 2000). When fluency is poor, when this automaticity is not developed, an individual's working memory is used so much for word recognition that the individual is unable to think about the meaning of the text (Chard, Vaughn, & Tyler, 2002; La Berge & Samuels, 1974). The individual is capable only of word-level reading, thus impeding content level reading and comprehension.

Thus, fluency is highly correlated with comprehension (Deno, Mirkin, & Chiang, 1982; National Assessment of Educational Progress (NAEP), 2002; NRP, 2000; Stanovich, 1986). While readers with poor fluency must spend their cognitive resources (i.e., working memory) decoding, fluent readers are able to decode words accurately, quickly and with automaticity, so that they can use their cognitive resources for comprehension (Chaffouoleas et al., 2004). Unfortunately, if fluency is not developed, it will impede students' learning in other content areas. If comprehension is slowed, it will be more difficult for students to master content areas such as science or social studies (Persampieri et al., 2006).

Although the importance of fluency is clear in the research on reading development, there are concerns that direct instruction is not being used to teach this subskill (Chard et al., 2002; NRP, 2000; Persampieri et al., 2006). This may be due to outdated beliefs that fluency is a skill that develops naturally in children, one that need not be taught or practiced (NRP, 2000). Additionally, fluency was previously not well distinguished from the skill of high speed word recognition. Now, however, it is clear that fluency is a separate skill that includes grouping words into meaningful units for interpretation. A child may have accurate word recognition, but their reading of intact text may be slow and laborious. With increased fluency skills, speed and ease of word recognition would be improved (NRP, 2000). With a better understanding of the process and the importance of fluency as a reading subskill, NICHD (1985) and the NRP (2000) indicate that an increased emphasis on teaching fluency is critical. Further, the reports from these national panels assert that ongoing assessment of fluency is necessary to

quickly identify and provide interventions for students whose fluency is below expected levels.

Guided Repeated Reading Interventions

With recommendations stemming from the fluency research, and encouragement from legislature to address reading problems, researchers and practitioners have focused more attention on developing and implementing effective reading interventions. The NRP (2000) was constituted by the NICHD and the Secretary of Education to assess and report on the research-based knowledge and effectiveness of reading instruction techniques. The Panel examined several critical areas of reading instruction, including fluency. Guided repeated reading interventions were found to be effective strategies for improving students' fluency. The NRP (2000) describes guided repeated reading as a procedure that requires students to reread text repeatedly, either a specified number of times or until a predetermined level of proficiency is reached. Additionally, the procedure involves increased practice through one-to-one instruction, tutoring, peer instruction or audiotapes. Finally, the NRP indicates that these procedures incorporate specific feedback routines to guide reading performance.

In a synthesis of the research on repeated reading interventions, the NRP reported on studies which examined a total of 752 subjects ranging from first grade through college. Studies examined readers of various abilities, with multiple variations on the repeated reading technique. Overall, these studies indicated clear improvements across variations in subjects and techniques (Dowhower, 1987; Herman, 1985; O'Shea, Sindelar, & O'Shea, 1985).

One of the studies included in the NRP synthesis was conducted by Herman (1985) who examined the effect of repeated readings on reading rate, speech pauses and accuracy of word recognition. The eight intermediate-grade students who were involved in this study were enrolled in a combined remedial reading and remedial math lab. They were selected for that enrollment because they scored between the 2nd and 17th percentile in total reading achievement on the Metropolitan Achievement Tests (MAT, 1970) and below the 33rd percentile in math computation on the MAT. Students in this remedial lab class who read between 33-50 words per minute were selected for the study. As part of the intervention, students were informed, before reading, of the importance of practice in learning. Each student was provided with a book of stories, selected by the researchers, with each story containing between 100-175 words. Students selected a story from their books and practiced reading for about 10 minutes on each of two days during their reading lab class. They tape-recorded their oral reading of the story, reading as rapidly as possible, with pronunciations provided upon request. Goals were set for 85 words per minute, and progress was illustrated by calculating words read per minute and entering results on individual bar graphs. When criterion was reached, students selected another story for practice. Students continued the repeated reading strategy for five separate stories. Treatment lasted an average of 21 days, with a range of 17-24 days.

For assessment, rate was calculated by determining words read correctly per minute for the taped reading of a passage. Speech pauses were calculated using a microprocessing computer componenet to tally the number of pauses lasting between 166 and 2666 msec. Number of unacceptable miscues was also calculated, including omissions of words and word substitutions. Results indicated that reading rate improved

significantly for all students within stories and between stories. This indicates that repeated practice on a story increases the rate of reading for that passage, as well as suggests that practice effects can generalize from one story to another. The number of speech pauses decreased within stories, but practice did not appear to significantly reduce pauses between stories. A drop in the rate of miscues occurred both within and between stories, but the difference was not significant. These results indicate a positive impact of repeated reading interventions on the reading rate of intermediate-grade struggling readers, even without a significant improvement in miscues. One limitation of the study was that the design did not control for possible time effects so that results could more reliably be attributed to the intervention. Because the students were participating in a remedial reading lab, it is possible that the additional supports in that setting could have accounted for some of the improvement in reading rates.

Dowhower (1987) examined the effect of two repeated reading procedures, assisted and unassisted, on the oral reading performance of second graders. Specifically, the author examined the effects of the procedures on reading rate, accuracy, and comprehension of practiced and unpracticed text. In this study, children were screened to identify second graders that had a slow reading rate (below 50 words per minute), but adequate word decoding skills (scoring 85% accuracy on reading passage). Eighteen students were identified and randomly assigned to one of two training groups, assisted or unassisted.

A time-series experimental design was employed in which all students participated in a pretest, 5 sequences, and a posttest. An initial screening and pre-test took place in Week 1 of the study, while the posttest was given in Week 7. Each of the 5

weekly sequences, which took place between the pre- and posttest, consisted of assisted or unassisted repeated reading of a practice passage until criterion speed of 100 WPM was met. Students then read a transfer passage. The reading rate of the first practice passage was then compared to transfer passage reading rate to determine transfer effects. The practice passage consisted of the first half of a story, while the transfer passage was the unread second half of the same story. During the 5-week treatment stage, students met with the experimenter 4-6 times per week for approximately 15 minutes to work on that week's sequence. During this stage, assisted readers listened first to each passage on tape, repeatedly reading along with the recording until they could read simultaneously with the recorded passage. They were then encouraged to rehearse without the tape until they reached the criterion. Unassisted readers read independently, without assistance of the recorded tape, but did receive word identification help when requested.

Results of this study indicated significant practice effects on practice passages, with mean score gains from each passage pretest to passage posttests in word accuracy and comprehension. There was no significant differences between groups. A transfer effect was also significant with mean score gains from passage pretest to transfer test for each of the sequences. Again, there was no difference between groups. Comprehension gains, as measured by unaided recall questions, were not significant. Finally, an overall transfer effect from initial pretest to final posttest showed significant mean score gains in reading rate, accuracy, and comprehension, with no significant between group differences.

Overall, the findings of this study indicate positive gains for students who participated in a 7 week repeated reading intervention. However, the transfer effects to

supposed unpracticed stories should be interpreted with caution. Only 6 stories were used in the study. The story that was used for the initial pretest in Week 1 was also used for the final posttest in Week 7. Each of the remaining 5 stories were used multiple times within one of the 5 treatment phase weeks. It is difficult to assess transfer effects to an unpracticed passage when the passage was essentially practiced several times within each sequence week during the intervention phase (Weeks 2 through 5), as well as once from initial pretest to final posttest (Weeks 1 and 7). Further, a multiple baseline or addition of a control group might have strengthened the indication that positive effects were due to intervention implementation.

In another study of the effects of repeated reading interventions, Chafouleas, Martens, Dobson, Weinstein, and Gardner (2004) examined the effects of adding performance-based interventions (performance feedback and contingent reward) to a skill-based repeated reading intervention. Three elementary students, aged 8-9 years old, participated in this study – two were in second grade general education classrooms and one student, designated with a learning disability, attended a special education classroom with students ranging from first to third grade. Each was identified by her teacher as having difficulty with reading and was reading below same grade peers. Each student participated in 3 intervention conditions: repeated readings alone, repeated readings with performance feedback, and repeated readings with performance feedback and contingent reward. The repeated readings condition involved students reading an entire passage 3 times, with assessment of words read correctly and errors per minute being calculated during the third reading. The second condition involved adding the performance feedback component, in which the student was informed how many words were read

correctly in one minute after each passage reading. Contingent reward was added to the procedures in the third condition. This phase involved having the student choose a small prize (i.e., sticker or pencil) prior to readings. The child was told the number of words read correctly in the last reading and was informed that she would earn the prize if she read at least one more word in the next reading.

At the start of the study, baseline assessment was conducted by administration of all of the passages to be used in random order to determine oral reading fluency. An alternating treatment design was used, with the order of conditions randomized across participants. Only one condition was administered in a single session. After completing each condition two times, a passage was read that contained high content overlap (HCO) with each of the passages read during the treatment conditions. The reading of this passage was assessed for words read correctly and errors per minute. Conditions were alternated and procedures repeated until criterion for mastering a passage was met (60 words read correct with no more than 3 errors per minute). As a condition was mastered, it was dropped while the other conditions continued until each was mastered.

Results of this study indicated that all participants' reading improved over baseline across all passages within all 3 intervention conditions. The HCO assessments paralleled results of the within condition readings, but the gains indicated less improvement over baseline, indicating modest levels of generalization. While all students showed improvements, there were also some differences between students, with the students who had the highest reading rates at baseline benefiting most from the repeated reading only condition, and the student with the lowest beginning reading rate responding best to repeated reading with performance based interventions.

One limitation of this study involved a lack of replication of conditions between subjects. Time constraints restricted all of the participants from fully meeting mastery criteria to move on to the other conditions. Another limitation involved using the HCO passages to assess generalization. These passages were created by the authors, who re-wrote these passages to have high levels of overlap in content with the original passages.

Another study examined two common components of repeated reading interventions, prosodic modeling and reading practice, and their effect on reading rate, accuracy, expressiveness and comprehension (Young, Bowers & MacKinnon, 1996). For this study, 40 students were identified as poor readers. This identification was determined by a standard score of 43 or less (24th percentile and below) on a standardized reading comprehension test and by the student having at least one of the following characteristics: teacher rating as below average on decoding and comprehension, and/or a score on the Woodcock Reading Mastery Test-Revised (Woodcock, 1987) Word Identification subtest below the 25th percentile.

Prior to intervention, students were tested individually for about 1 hour and randomly assigned to one of four treatment groups. The training tasks differed for each of the treatment conditions. In the No Prosodic Model/No Practice of Text Condition, students were provided a list of scrambled words from the training text, which they read orally three times. In the Prosodic Model/No Practice of Text Condition, students listened to the experimenter read a passage aloud three times in a fluent, expressive manner as a good model of prosodic reading. In the third condition, No Prosodic Model/Practice of Text Condition, students read the passages orally 3 times. In the final condition, Prosodic Model/Practice of Text, the students and the experimenter read each

passage three times orally. The experimenter provided a model of fluent, expressive and intonated reading.

After the initial testing session, 3 training sequences were implemented. In each training sequence, the child began with an unassisted reading of the first half of a reading passage (Part 1), which served as a pretest. Retelling was used to assess comprehension. The training task was implemented according to the condition and was followed by a posttest of fluency, speed and accuracy on an unassisted reading of Part 1. Within-story transfer was assessed by recording fluency rate, reading speed and accuracy in an unassisted reading of Part 2. The final step in each training sequence was a posttest retelling to assess transfer and comprehension. After the training sequences had been completed an overall assessment and final test sequence was implemented which included an unassisted reading of Part 1 of the passage read in the pretest, an unassisted reading of Part 2 from that same story, and a retelling of the whole story.

Results indicated that reading speed, accuracy, fluency and comprehension improved after training within sequences, regardless of treatment condition. Students who received repeated reading training showed significant additional gains on all reading performance measures over those who did not engage in repeated reading practice with intact text. Modeling did not appear to improve reading performance differentially from the No Prosodic Model conditions. Unfortunately, replication of this study for research or practice may be difficult due to the authors' omission of frequency of sessions or duration of the study. It is unclear if the intervention could be completed in a week or if the entire treatment would require a longer duration.

Another study, conducted by Taylor, Wade, and Yekovich (1985) also examined and compared the effects of two reading interventions, repeated reading and text manipulation, individually and additively. The study included 45 fifth grade students. Students designated as poor readers were randomly selected from a sample of students falling within the third and fourth stanines on the Comprehension and Word Recognition subtest of the SRA Achievement Test (Naslund, Thorpe, & LeFevre, 1978-1981). Good readers were selected from students who scored in the sixth and seventh stanines on the test. Students were assigned to one of four conditions: phrased-practice, phrased-nonpractice, nonphrased-practrice, or nonphrased-nonpractice. For the study, four reading passages were used, ranging from 208-264 words in length. Each of the passages were transformed to yield a set of phrased passages, divided by slash marks, which broke the text into thought units or idea units. In these phrased passages, the text was typed with only one thought unit per line. Standard sentence and paragraph structure was used for passages in the non-phrased condition. The four passages and conditions were counterbalanced across subjects.

Recall was measured in an unstructured free recall condition in which students were asked to tell the examiner everything they could remember about the story. The students' responses were scored by determining the percentage of thought units recalled. Additionally, a structured recall assessment was used, consisting of 6 probes and questions which addressed setting, initiating event, internal response, attempt, consequence and reaction within the story. Results of the study indicated a significant main effect for practice. Practice improved the reading of both good and poor readers on nonphrased materials in the free recall assessment. It also improved good readers'

performance on phrased materials. Significantly, in the nonphrased conditions, practice appeared to eliminate the discrepencies between good and poor readers. Phrased text actually had a negative impact on good readers who did not have practice, while practice seemed to mediate that negative effect. Significant main effects also were found in the structured recall assessment for both good and poor readers in the practice condition. Although the results of this study appear promising for the use of repeated reading, the authors are unclear in specifically stating what the repeated reading or practice intervention entailed. Procedures for the data-gathering sessions also were not clear.

Parent Tutoring Programs in Reading

In addition to requiring evidence based reading instruction and interventions, NCLB also requires greater parental involvement in education. One way that education professionals can encourage the implementation of both is through parent tutoring programs in reading. Parent tutoring has been shown repeatedly to also be an effective tool for improving reading skills in elementary aged children.

Shuck, Ulsh, and Platt (1983) examined the effects of parent tutoring of 150 students on the reading achievement of low socio-economic status (SES). The experimental group consisted of 75 students in grades 3 through 5 who participated in the parent tutoring program, while the control group was comparable with the exception that they did not participate in the program. Assignment to experimental or control groups was random. All students were administered pre- and posttests in reading using a norm-referenced achievement test of comprehension. Students in both conditions also attended a reading 30-minute reading lab every school day during the study. Parents of students in the experimental group tutored their children using calendar books and individualized

homework activities. Activities included parents helping their children read a book, doing homework assigned by their school reading lab, working on a word list from the lab, or playing games from the lab. Children chose the activity from individualized reading programs. In addition, a token economy behavior modification plan was implemented to reinforce each assignment that the child completed. Results demonstrated that elementary aged students who were tutored by their parents had a reading post-test grade equivalent score of 3.8 (grade level equivalent), as compared to a score of 2.8 by the control group. These results indicated a statistically significant main effect for the independent variable, parent tutoring. This study indicates that positive reading outcomes result from parental involvement in children's reading progress. However, it should be noted that because the control group did not receive any tutoring, the amount of variability in scores that can be attributed to parental involvement rather than the participation in tutoring can not be determined.

Morrow and Young (1997) reviewed a more comprehensive year-long program designed to involve parents in culturally sensitive and developmentally appropriate literacy activities. Participants included the parents of 56 first- through third-grade students in an inner city school district (28 experimental participants and 28 control). Children were randomly selected from two first (n=19), two second (n=17), and two third (n=18) grade classrooms. Classrooms were randomly assigned to treatments, with one classroom from each grade assigned to the experimental condition and the other to the control condition. Both the experimental and control groups participated in an in-school literacy program. In addition, students in the experimental group also participated in a family literacy program that included all of the elements of the school program and

similar activities to engage in at home. For example, parents read to and with the children often, told stories about family experiences using a storyboard, wrote in journals, created a word box, read *Highlights* magazines together, and had home-based literacy center time. Parents in the experimental group were provided a copy of a Parent Handbook which explained the important role that parents play in literacy development and provided suggestions for parents working with their children on literacy. Meetings were held each month over an entire school year and involved teachers, parents and children in the experimental group. Parents kept records of participation in all activities. Program implementation was checked via phone calls made to parents by the researchers, parents submitting weekly reports and school meetings for parents.

The purpose of the program was to improve children's achievement and interest in reading and writing. To determine the students' growth, researchers administered a holistic story retelling and writing test, a probed comprehension test, the California Test of Basic Skills (CTBS; 1980), teacher ratings of children's interest in reading and writing, and student interview data. Analyses revealed that the experimental group scored significantly higher than the control group on the story retelling measure, the story rewriting test, and the Probed Recall Comprehension Test (Morrow, 1997). However, the experimental group did not score significantly higher on the CTBS. Qualitative analyses indicated that the teachers of children in the intervention group scored the children significantly higher in reading and writing interest and ability. Additionally, interviews showed that both parents and children involved in the intervention enjoyed spending this time together. Overall, this study revealed the positive effects of global parent involvement, including reading, writing, and other activities, in children's literacy

development. However, the time-consuming nature of the intervention could be considered a limitation, as other responsibilities made it difficult for some parents to attend meetings and participate in the additional activities at home.

Senechal and LeFevre (2002), in their longitudinal study, defined parent involvement as home literacy experiences and divided these experiences into two types: informal and formal. Informal literacy experiences were defined as those emphasizing messages within the print; an example might be the situation of a parent reading a bedtime story to a child. Experiences that emphasize the print itself were considered formal. An example of a formal experience would be a parent reading an alphabet book to a child, focusing on each letter and/or the sounds of the letters. They described three objectives, including assessing the importance of parent storybook reading and parent reports of teaching the development of children's oral language, emergent literacy, and phonological awareness.

The researchers also wanted to investigate the impact of early literacy experiences on reading skills acquisition, measured at the end of Grades 1 and 3. To this end, they assessed the home literacy activities of three cohorts of children from three schools, including two kindergarten classrooms (K-cohort, N = 100) and one first-grade classroom (Gr1-cohort, N = 58). Literacy experiences were measured using parent reports of how frequently they taught their child to read and parents' own storybook exposure. The latter measure consisted of parents indicating which titles and authors of children's books they recognized from a prepared list. Parents also completed the Author Recognition Test (Stanovich & Cunningham, 1992), which consists of authors of popular adult literature, and is used as a measure of adult literacy.

Children's language and emergent literacy were assessed for both cohorts during the first half of the school year across two sessions. Skills and abilities that were tested included receptive language, phonological awareness, emergent literacy and analytic intelligence. Measures used in this study included the following: Peabody Picture Vocabulary Test – Revised (Dunn & Dunn, 1981), Stanford Early School Achievement Test (SESAT; Psychological Corporation, 1989), Items 1 through 9 and 11 from the Concepts About Print Test (Clay, 1979), asking to name 15 letters to demonstrate alphabet knowledge, decoding to read simple consonant-vowel-consonant words, invented spelling (4 points; Mann, Tobin, & Wilson, 1987) and the animal house subtest of the Weschler Preschool and Primary Scale of Intelligence-Revised (Weschler, 1989). Additionally, the Grade 1 cohort was assessed using the reading vocabulary subtest of the Gates-MacGinitie Reading Tests (Level A, Form 3; MacGinitie & MacGinitie, 1992). The Kindergarten-cohort was tested with the letter-word identification and passage comprehension subtest of the Woodcock-Johnson Psycho-Educational Batter-Revised (1989). Finally, reading was assessed at the end of grade 3 using the vocabulary and comprehension subtests of the Gates-MacGinities Reading Tests (Level C, Form 3; MacGinitie & MacGinitie, 1992).

A fixed-order hierarchical regression showed that with regard to receptive language at the beginning of Grade 1, storybook exposure explained a significant (9%) amount of the variance. With regard to emergent literacy, parent reports of teaching reading did not explain a significant portion of the variance (2%) in receptive language. Interestingly, phonological awareness accounted for 5% of the variance in receptive language, while emergent literacy skills were not predictive of receptive language.

Neither storybook exposure nor parent report of teaching was predictive of the phonological awareness. The authors hypothesized that receptive language and emergent literacy skills may be acting as a mediator on the effect of parent variables on phonological awareness.

Analyses revealed that parents' reports of teaching, not storybook exposure, accounted for a significant portion (12%) of the variance in reading skills at the end of Grade 1 for the Kindergarten cohort. In addition, these children's emerging literacy skills acted as a mediator on the link between these two variables. At the end of Grade 3, early storybook exposure, not parents' reports of teaching, predicted reading skills. This effect was mediated by children's early receptive language skills, and was significant for both the K-cohort and the Grade 1 cohort. Overall, clear links were shown between home literacy experiences and future reading skills directly and indirectly, and the two types of home literacy included in the study demonstrated differential effects on children's reading development at different points in time. As exposure to storybooks was not a significant predictor of children's emergent literacy skills, a limitation of this study might have been the absence of more formal literacy experiences, more guidance of a caregiver or family member, and an emphasis on quality of adult-child interactions as opposed to quantity and diversity of interactions. Though the authors delineate various questions for future research to address, they did not hesitate to recommend that teachers encourage parents to read stories to their children based on evidence that it facilitates the development of fluent reading skills in the future.

Powell-Smith, Shinn, Stoner, and Good (2000) examined the effects of two formal parent-tutoring programs, literature-based (LB) and curriculum-based (CB), on

students' performance in reading achievement. In this study, 36 student-parent dyads were randomly assigned to one of the two tutoring programs or a control group. Parents assigned to the tutoring conditions were trained in the tutoring procedures. Parent tutoring occurred four times a week in 20-minute sessions during the treatment phase. Parent training and tutoring procedures were the same in both experimental conditions. but the materials used in each condition were different. The LB program used a selection of age-appropriate children's books, while the CB program dyads used basal readers from the student's classroom.

Each tutoring session, in both conditions, was divided into tree components – Preview, Child Reads Aloud, and Choice Activities. In the Preview component, an advance organizer was provided in which the parent discussed the tutoring or story topic. In the Child Reads Aloud segment, the child read aloud for 10 consecutive or non-consecutive minutes. For the Choice Activities segment, parent and child participants could select from several activities: parent reads aloud to child, discuss how stories relate to personal experience, or question-and-answer session about what was read.

Curriculum-Based Measures in reading (R-CBM) were used to assess the efficacy of the programs, with data collection occurring during baseline, intervention, and follow-up phases of treatment. Analyses indicated that some individual students experienced gains greater than students in the control group. Significantly, students who were not making adequate progress during baseline data collection (slope less than or equal to 1.0 word gained per week) improved more than students who already were making adequate progress at that time. However, outcomes of this study revealed that neither parent

tutoring program had significant effects on students' reading achievement, as measured by R-CBM.

It should be noted that participants were included based on selection by their teachers as "low readers," without regard to specific skills with which the students might be struggling. The same intervention was used with all students, then, without regard to targeting specific skills. Additionally, it is possible that there were not enough students in each group for statistical power to detect a significant effect. Finally, there was a potential for variability within the tutoring sessions, based on participant preference, that was not accounted for. For example, Preview could be conducted as either a discussion of the tutoring process or the topic for the day, Child Reads Aloud could consist of consecutive or non-consecutive reading, and Choice Activities offered several alternatives. These variables do not appear to be accounted for in the analyses or report.

Fiala and Sheridan (2003) examined the effects of a parent-tutoring program on three Caucasian students from dual parent households. One student was in fourth grade, while the other two were in third grade. All were in general education classes and had scores of at least 85 on the Wechsler Intelligence Scale for Children (WISC-III), but read at a rate of less than 70 words correct per minute. Parents and students were trained in a paired reading (PR) method involving a one-hour session with the first author and agreed to implement the intervention with their child a minimum of four times per week. Each PR session followed a structured protocol that allowed for time to warm up, child selection of reading material (from material provided), and 10 minutes of parent and child simultaneously reading at a rate selected by the child. During this time the child would use a predetermined nonverbal signal to indicate to the parent that he or she felt

comfortable reading independently, and the parent would stop reading aloud and follow along silently. In each phase (the duet reading and independent reading), the parent would correct any words that the child read incorrectly. These sessions were audio taped by the investigators and coded appropriately.

To monitor the effects of the intervention, CBM probes were administered twice weekly at school, and progress (in both fluency and accuracy) was charted. Results showed that two of the students improved in reading performance, after 6 weeks and 5 weeks of the intervention. The third student received the intervention for only 3.5 weeks and his data showed conflicting results. The authors concluded that a longer intervention phase may produce more stable data; however, despite variability in the data, it appeared that all students met the gains that would be expected based on CBM guidelines (i.e., 1.0 word per week at Grade 3, 0.85 words per week at Grade 4). In addition to positive student outcomes, the authors also pointed out the high social validity and treatment acceptability of the program, which they propose led to the high treatment integrity.

Conclusion

Literacy is a gateway to accessing many important resources in life. An inability to read proficiently is a serious barrier that may impede multiple areas of functioning. Reading proficiency is dependent on one's ability to read fluently. Fluency is a critical subskill of reading that needs to be taught in order for readers to be able to meaningfully comprehend text. It is also necessary to assess and identify students who are not reading fluently at an expected level, so that interventions can be implemented to help them develop this subskill.

Specific parent involvement interventions geared towards enhancing student literacy skills, including fluency, have been examined and found to be effective. Effective interventions include parent tutoring of their children, parent training sessions, increasing parental access to a public library, and parental involvement in writing activities. Overall, parent involvement in multiple forms is a useful tool in improving student literacy.

Repeated Readings is a specific intervention that has been found to be very effective in increasing fluency. However, this particular intervention has been implemented mainly by educators and researchers. The current study adds to current research regarding parent involvement interventions for literacy in elementary-aged students by evaluating a brief parent intervention to improve reading fluency. Assessments were conducted to identify students who demonstrate specific difficulty with reading fluency, and a parent tutoring program using a guided repeated reading intervention was used to target that skill deficit. This study was designed to replicate parent tutoring program studies which demonstrate the effectiveness of parent involvement in reading achievement. It adds a unique contribution to the literature, however, in the use of the guided repeated readings intervention with parents as tutors and with the concept of matching the intervention to a child's specific reading skill problem.

CHAPTER THREE

RESEARCH METHODS

This chapter focuses on methods that were employed in conducting the present study. First, participants, settings and measures will be described. Next, the research design will be discussed, followed by a through description of the procedures that were followed in the study. The discussion of procedures will include ethical considerations, participant selection, baseline period, parent training, intervention phase, procedural integrity, follow-up phase, inter-rater reliability and data analysis. Finally, the potential limitations of this investigation will be presented.

Participants

Six students were randomly selected from those identified as moderate risk for reading failure based upon quarterly Reading Curriculum-Based Measurement (R-CBM) assessments administered to all 2nd through 4th grade students enrolled in a Charter school in West Central Florida. Students who were identified as moderate risk for reading failure in second grade read between 70-88 words per minute on the R-CBM. Those at moderate risk in third grade read between 80-109 words per minute, and those at moderate risk in fourth grade read between 96-117 words per minute. Random selection was performed using a randomized sequence generated by the True Random Number Service (Hahr, 2006). Problems in fluency were discriminated from difficulties in more basic early literacy skills (i.e., decoding) based on the student's reading level falling in the at moderate risk for reading failure range. Students whose scores fall in the high risk

range are likely to be experiencing problems with more basic reading skills (i.e., decoding) and accuracy. Finally, it was necessary that one parent for each child agreed to participate in the study and commit to implementing the intervention. Parent/child dyads were also required to be fluent speakers of the English language in order to participate. Students who were excluded from the study were any child not enrolled in the second through fourth grade at this Charter school, students who were identified as high- or low-risk for reading failure, and children whose parents did not agree to participate, and those parent/child dyads who did not speak English fluently. While 6 students began the study, one parent-child dyad discontinued participation in the study immediately following the baseline phase, due to a previously unplanned vacation which lasted for the remainder of the study.

Student 1 was a nine-year-old male student in the third grade, identified as Non-Hispanic Black. Student 1's mother, also of Non-Hispanic Black descent, was the parent participant. She had 2 children, including the student participant, was in the 30-34 year old age range, graduated from high school, and was currently employed as a research associate.

Student 2 was a 7 year old female in the second grade. She was of Non-Hispanic Black descent. The student's mother served as the parent participant for this study. She had 3 children, including the child participant, and was also of Non-Hispanic Black descent. She completed some high school and fell within the 30-34 year old age range.

Student 3 was a 10 year old Non-Hispanic Black male in the 4^{th} grade. His mother, also of Non-Hispanic Black descent, served as the parent participant. She had 2 children, was a high school graduate, and fell within the 40-44 year old age range.

Student 4 was a female in the 4th grade. She was 11 years old and also of Non-Hispanic black descent. Her mother served as the parent participant. Student 4's mother had 2 other older children, identified herself as Non-Hispanic Black, was a graduate of technical school, and fell within the 40-44 year old range.

Finally, Student 5 was a 9 year old Non-Hispanic black female in the 2nd grade. Her mother, the parent participant, was also of Non-Hispanic Black descent. She had 3 children, including the student participant, and fell within the 30-34 year old age range. Student 5's mother obtained her GED and was currently employed as a sales representative.

Settings

Data collection with R-CBM assessments initially took place at the participants' school, a charter school with six classrooms, which serves students in Kindergarten through 4th grade. The school primarily serves students with a history of frequent out-of-school suspensions and/or expulsions, and 75.4% of the population is considered economically disadvantaged. The population of 108 students is predominantly African American (98.3%). With the commencement of summer vacation, it was necessary to continue assessments in various locations, as was convenient for the participants. Thus assessments were conducted in the participants' homes, relatives' homes, day care, and summer camps. Each parent was provided the option of having parent training occur in a common area in her home (i.e., living room, kitchen) or in a classroom at the school, at a time that was convenient for the parent and the primary investigator (PI). Each parent chose to have the parent training occur in her home.

Measures

Independent Variable

Parents were trained to implement a Repeated Readings intervention in which the student read a passage repeatedly and received help with reading errors. Parent-child dyads involved in this intervention engaged in 2-35 minute reading sessions. During these sessions, the child read a passage aloud, while the parent provided feedback for misread words, hesitations (i.e., the student pauses for longer than 5 seconds), requests for help, or requests for definitions (Wright, 2001). The parent timed the reading passage, marked the last word read at one minute, and calculated how many words the child read correctly in one minute. The child read the passage again, repeating timed readings until s/he met one of the two following criteria: reached his/her words per minute (WPM) goal (90 WPM for second grade students, 110 WPM for third grade students, or 118 words per minute for fourth grade students - the benchmark goals for students in grade level material for their quarterly assessments), or read the passage three consecutive times, as this is the number of repetitions indicated by O'Shea, Sindelar, and O'Shea to be most efficacious in repeated reading interventions for improving recall (1985, 1987). During the intervention session, the parent provided the child with specific praise for their reading performance (i.e., "I like the way you sounded out this word that you didn't know" or "You are doing a good job at trying to read each word.") and charted the child's progress on graph paper.

Dependent Variables

Demographic Measure

A brief questionnaire to collect demographic information was also administered with parent participants. Information collected included gender, age, education level, and ethnicity of parent and child participants. A sample of the demographic questionnaire is provided in Appendix A.

Curriculum-Based Measurement

Curriculum-Based Measurement (CBM) is characterized as dynamic indicators of basic skills (Shinn & Shinn, 2002). They are considered dynamic because probes (grade-level reading passages) are brief measures, designed to be sensitive to gains in student performance over short periods of time. Thus, the measures are effective for monitoring progress frequently. CBM is considered indicators because they measure key behaviors that indicate overall performance in an academic area. For example, Curriculum-Based Measurement of reading fluency (R-CBM) measures students' reading rate of correct words per minute, and are strongly correlated with overall reading performance.

R-CBM is also used because of the validity and reliability of these tools in measuring reading fluency (Marston, 1989; Roberts, Marshall, Nelson, & Albers, 2001; Shinn & Shinn, 2002). They are also sensitive to small changes over time, can be administered frequently without interference with score validity, are cost-effective in terms of time and money, have high acceptability among teachers, and are easily scored and interpreted (Roberts et al., 2001). Curriculum-Based Measurement (CBM) is designed to assess student achievement in what they are learning in their current curriculum, as opposed to standardized tests which may measure abstract constructs or

student knowledge of materials to which they may not have been exposed (Marston, 1989). Reading probes for this measure can be taken directly from the child's curriculum or can be selected from various sources which provide grade level probes. Research supports the use of these generic materials to effectively monitor progress regardless of the child's current reading curriculum (Fuchs & Deno, 1992; Fuchs & Deno, 1994; Powell-Smith & Bradley-Klug, 2001).

Technical adequacy of CBM. Studies demonstrate the strong technical adequacy of CBM (Marston, 1989; Shinn, Good, Knutson, Tilly, and Collins, 1992). Deno, Mirken, and Chiang (1982) showed that CBM reading assessments were valid measures of reading when correlated with norm-referenced tests of reading [Stanford Diagnostic Reading Test (Karlsen, Madden, & Gardner, 1975); Woodcock Reading Mastery Test (WRMT; Woodcock, 1973); Peabody Individual Achievement test (PIAT; Dunn & Markwardt, 1970)]. Correlation coefficients ranged from .73 to .91. Reliability has been determined using test-retest estimates, parallel form estimates, and interrater agreement coefficients (Marston, 1989; Shinn, 1981; Tindal, Germann, et al., 1983). Coefficients ranged from .82-.97, .84 to .96, and .99 for these measures, respectfully.

Additionally, the CBM authors present evidence that there is equivalent difficulty within a set of passages for each grade level. Equal difficulty of passages was established through calculation of alternate-form reliabilities. In order for a passage to be included in the set of probes for a grade level, they must be highly correlated (greater than .70) with all other passages in the set. Means, standard deviations and standard errors of measurement were also compared when establishing a set of probes. Passages whose mean score were more than +1.0 standard error of measurement outside the grade-level

mean were discarded. The Lexile-graded standards method for estimating reading passage difficulty, developed by Stenner and Burdick (as cited by Howe & Shinn, 2002), were also used to examine passages. Passages that were not scored in an acceptable range for that grade, according to the Lexile standards, were eliminated. After examining passages using the above methods, a final pool of 33 passages for grade 3 have remained and are available on the AIMSweb website.

Selection and administration of CBM. The PI monitored students' progress in oral reading fluency, using reading passages that were randomly selected from standard passages developed by Edformation as part of AIMSweb formative assessment system (Howe & Shinn, 2002). These passages have technical adequacy, with reliability correlations ranging from .80 to .90 across grades 1 through 8 (Howe & Shinn, 2002). The PI used standardized administration and scoring rules for each administration of the CBM probes. A copy of these instructions are provided in Appendix B. The PI used a standardized script to provide instructions during each administration and a stopwatch was used to monitor time, giving students one minute to read each passage aloud. An examiner copy of the passage was used to record errors, including omission, substitution, and mispronunciation (Shinn, 1998). Scoring involves counting the number of words read correctly and errors in the one minute reading. These data were collected by the PI, a school psychology graduate student who has received training, practice, and feedback in the administration and scoring of R-CBM probes.

Social Validity Measures

Parent satisfaction with the intervention was measured using a modified version of the Intervention Rating Profile (IRP-15) (Martens & Witt, 1982). This social validity

scale contains twelve items rated on a 6-point Likert-type scale from "strongly disagree" to "strongly agree." A sample of this scale can be found in Appendix C. Students' perceptions of the intervention were determined using a modified version of the Children's Intervention Rating Profile (CIRP; Witt & Elliot, 1985). The child social validity scale contains six items on a 3-point scale. A sample can be found in Appendix D. The technical adequacy of the IRP was examined by Witt and Martens, who found that it correlated (.86) with the Evaluative Scale of Semantic Differential (1983). They also found the reliability coefficient of the IRP to be .98.

Design

A multiple baseline across subjects design was used in this study to analyze the data and test hypotheses. The design included three stages for each student – baseline, intervention, and follow-up. Parent-student dyads began the baseline phase at the same time. Five parent-student dyads allowed for five baselines, as a minimum of three baselines is recommended (Kazdin, 1982). Data collection throughout all phases consisted of progress monitoring with CBM measures. Once a participant's scores showed stability or a decreasing trend, or at least a decrease from the last data point, that participant dyad began the intervention phase. No more than one dyad began intervention on an assessment day (Monday or Thursday). Visual analyses and trendlines were used to determine stability or decreasing trend, characterized by the absence of slope in the data points (Kazdin, 1978), or decreasing slope. The purpose of the baseline was to reduce threats to internal validity, such as history, maturation, testing and instrumentation threats (Barlow, Hayes, & Nelson, 1984). Changes in behavior of students who were in the intervention phase that did not occur with students who

remained in baseline phases provided confidence that changes were due to effects of the intervention (Cooper, Heron, & Heward, 1987). The intervention phase lasted for 5 weeks for each participating dyad, with follow-up occurring 2 weeks after completion of the intervention. This design allowed for initial demonstration of reading fluency prior to intervention, demonstrations of intervention effects during the intervention; and an assessment of intervention effects at follow-up.

Procedure

Ethical Considerations

The study was proposed to the University of South Florida Division of Research Integrity and Compliance Institutional Review Board (IRB) for approval and the Hillsborough County Public Schools Department of Assessment, Accountability, and Evaluation. The study began upon approval of these entities. Written approval from the acting school principal was obtained, as the school principal was on maternity leave. The school principal had previously given verbal approval and, upon her return, assisted in identifying potential student participants. The researcher made every effort to ensure that participants were treated ethically and that confidentiality was maintained. Informed consent was sought from parent participants. Students were identified by number for data entry purposes. Data is kept in a locked file box in the possession of the PI, and names will be changed in any future verbal or written presentation of the research.

Participant Selection

The school principal identified potential student participants among the 2nd – 4th grade students at the Charter school who scored in the moderate risk range of reading skills. This range was determined by the Spring 2007 administration of quarterly state-

wide reading assessments, using Dynamic Indicators of Basic Early Literacy Skills (DIBELS). Six students were randomly selected from those identified, using a randomized sequence of numbers generated by a web-based number randomization service (Hahr, 2006). The school secretary contacted caregivers to inform them that their child was identified as needing strategic or intense interventions to help them achieve grade-level reading skills, and asked parents if they would be interested in participating in a study which would provide such an intervention. A general description of what would be required of parents was provided (e.g., time, activities). If the parent agreed to learn more about the study, the examiner met with the parent and student together to describe the program in detail and obtain informed consent. Informed consent for parents can be found in Appendix E, and informed assent for children in Appendix F. If, at any time during the recruitment process, a parent or child declined to participate, another child was randomly selected for recruitment from those identified as potential participants, until six child-parent dyads consented to participate in the study. Only one parent declined participation, explaining that she did not have enough time to implement the intervention with the frequency and expected duration described by the examiner.

Baseline Period

The baseline period of data collection involved typical classroom and home routines for reading instruction. For purposes of this assessment, AIMSweb probes were administered from the student's grade level. A goal and aimline for each student was established, based on the baseline data and oral reading fluency benchmarks set by the Florida Center for Reading Research (FCRR). For example, according to these benchmarks, 3rd grade students are considered low-risk for reading failure and on grade

level if they are reading at least 110 words read correct (WRC) in third grade material, during the Spring assessment period. Thus the student participant in the third grade was given a goal of 110 WRC. Data was collected twice a week, with at least one day in between assessment, during all three phases of the study.

Once a stable or decreasing trend was demonstrated during baseline data collection for a participating dyad, the parent training was conducted and that dyad began intervention, while baseline data collection was continued for remaining participants. The intervention was implemented for pairs of participants sequentially: baseline data collection continued until another dyad demonstrated a stable or decreasing trend, and that dyad participated in training and began intervention, while remaining students continued in the baseline phase. This process continued until all dyads were involved in the intervention phase. Data collection continued twice a week for the duration of the study. It is important to note that academic performance data rarely indicate complete stability, and may be expected to show an increasing trend. While this may result in more difficult data analysis, Kazdin (1982) suggests that these trends rarely hinder the ability to determine intervention effects in multiple baseline designs if the effects are strong.

Parent Training

Once baseline was completed for a student, the researcher trained that student's parent to implement the reading intervention with her participating child. The training was scripted to ensure that trainings were equivalent across parents. A copy of the training script can be found in Appendix G. The training consisted of one 45 minute – 60 minute training session in each participant's home. The training consisted of instruction,

modeling, role play and feedback. Parents were trained on providing corrective feedback and specific positive feedback, timing reading passages, scoring and graphing words read correct (WRC). Parents were given the opportunity to ask questions. Parent participants were provided with a calendar to schedule intervention sessions and follow-up phone calls (implementation checks), and for progress monitoring data collection with students. Also during this training session, parent and student demographic data were collected.

Intervention Procedure

The materials needed for this intervention were grade level reading passages, binders, graph paper, a stopwatch, audio recorder and audio tapes. These materials were provided by the primary investigator for each parent. Reading passages were obtained from AIMSweb, a website that provides CBM testing materials for screening, assessment, and progress monitoring. The examiner copies of the reading passages have a line by line tally of the number of words, so that each passage can be scored easily and quickly.

For each intervention session, the parent was instructed to sit with their child in a quiet location in their home, so that they would not be disturbed by distractions. Sessions were expected to occur 4 times per week, the average number of sessions for structured training sessions in the literature, and they were brief, lasting only 15-30 minutes (Shinn, Walker, & Stoner, 2002). Parents were instructed to position reading materials so that the parent and the child could each easily see and follow their own text. The student read the whole passage aloud, while the parent provided feedback for misread words, hesitations (i.e., the student pauses for longer than 5 seconds), requests for help, or requests for definitions (Wright, 2001). The parent timed each reading passage and

placed a mark on the last word the child read at one minute. The parent was instructed to calculate how many words were read correctly in one minute. When the student finished the passage, s/he read it again. The student re-read the passage until s/he read the passage at his/her goal rate of at least 80 WPM (2nd grade), 110 WPM (3rd grade), or 118 WPM (4th grade), the benchmark goals for students in grade level material (Good, Simmons, Kame'nui, Kaminski, & Wallins, 2002), or until the passage was read three times (O'Shea, Sindelar, & O'Shea, 1985, 1987), whichever occurred first. The parent was instructed to provide the child with specific praise for good reading (i.e., "I like the way you sounded out this word that you didn't know," "You are doing a good job at trying to read each word") and to chart the child's progress on graph paper for each repeated reading session.

Intervention Phase

The intervention phase for each participant lasted for 5 weeks. The intervention was expected to be implemented 4 times per week during 15-30 minute sessions. The intervention generally occurred in the participants' home in an area where there were no distractions, to be determined by the parent participant for each dyad. Progress monitoring data were collected twice weekly by the researcher at the child's school, home, day care, or summer camp, using R-CBM probes. Immediate feedback was provided to the child, by graphing the student's progress after each progress monitoring session during intervention and follow-up.

Procedural Integrity

Treatment integrity was monitored using two measures. The first was a self-report checklist on which parents recorded the date of the intervention session, beginning

and ending time, intervention activities completed, number of times the passage was read, assessment of the session (i.e., an indication of how well the session went), and any questions that arose. The investigator collected these checklists from the child when they met for their first progress monitoring session each week. If the child did not have the checklists at this time, the investigator called the parent to remind them to send the checklists with the child for the second assessment session that week. A sample of this parent checklist can be found in Appendix H. Additionally, the investigator called the parents once a week during the intervention phase to assess implementation. The investigator addressed any issues or concerns, inquired about the number of sessions that had been completed, and addressed anything notable from the parent checklists (i.e., inconsistencies, questions).

Follow-Up Phase

Two weeks after the end of intervention, maintenance effects were evaluated with the collection of R-CBM data, two times per week for two weeks. Caregivers and students also completed the social validity measures at the end of this phase. The researcher met with each participant dyad to provide them with these measures, assisting the child in completing the student measure while the parent completed her measure.

Inter-rater agreement

Inter-rater agreement was determined by tape recording progress monitoring sessions conducted by the PI, and randomly selecting 30% of probes to be scored by another school psychology graduate student in the investigator's graduate program. The PI has been trained and has attained proficiency in using the CBM. The average agreement percentage for the selected probes was 96%.

Data Analysis

Data were analyzed from the R-CBM assessment information. The assessment data is displayed graphically to indicate performance during baseline, intervention and follow-up phases of the study. Data has been compared across phases. The rate of change is demonstrated by trendlines (i.e., slope), calculated using the Microsoft Excel graphing program. This program calculated trendlines using the linear equation y=mx+b. Aimlines also were calculated so that actual performance can be compared to projected progress toward goals. The change in level across phases was also examined. Kazdin (1982, p. 234) refers to change in level as "the shift or discontinuity of performance from the end of one phase to the beginning or the next phase." It is noteworthy, however, that sudden changes between levels may not occur in studies of academic skills. Thus an alternative definition of level was used in the current study: The mean of the data points from the last week of the baseline phase (i.e., last two) was compared to the mean of the data points from the last week of the intervention phase (i.e., last two data points). Additionally, the mean of the last two data points from the last week of the intervention phase (i.e., last two data points) was compared to the mean of the data points from the follow-up phase.

Data were also examined for variability, or consistency in daily performance within phases (Shinn et al., 1993), to help determine if data were an accurate representation of the students' performance. Also, percentage of non-overlapping data points between phases have been calculated using the following formula: number of data points that fell above the highest baseline data point, divided by total number of data points during intervention phase, multiplied by 100 (Stape, 2000). A smaller percentage

of overlapping points indicates a stronger intervention effect than a high degree of overlapping points between phases.

Magnitude of change was also examined using median words read correct and errors within each phase. Where the analysis demonstrates that performance increases sequentially during intervention phases, as the intervention is implemented with each of pair of participants, it may be inferred that the intervention has influenced the change in performance. Additionally, hierarchical linear modeling was conducted for additional decision-making analyses.

Social validity and demographic data were also examined. These data were examined by calculating mean scores. In addition, a qualitative analysis of these data have been included, looking at any themes or patterns that might be evident or warrant further investigation.

Limitations

Threats to internal validity

Threats to internal validity may include maturation, statistical regression, and implementation bias (Onwuegbuzie, 2003). With maturation, changes in scores may be partially due to the passage of time. A multiple baseline design was used to help prevent this bias. Statistical regression may occur because students were selected due to low reading scores and the tendency is for more extreme scores to regress toward the mean on subsequent assessments (Glass & Hopkins, 1996). Implementation bias and the likelihood that all administrators did not implement the intervention with integrity, was more likely to occur as the number of intervention administrators (in this case, parents) increased. Parents were provided with individual training on the intervention, intervention sessions

were recorded, and the PI provided feedback during the implementation phase to help improve implementation integrity.

Threats to external validity

Population validity posed a threat to the external validity, as generalizability of the findings were limited by the inability of the researcher to collect true random samples from the population (Onwuegbuzie, 2003). The sample was chosen from only one Charter elementary school. Ecological validity was a threat to external validity, as the generalizability of the sample may be limited (Onwuegbuzie, 2003). For example, findings may not generalize across settings or conditions, but may be limited to students with similar demographic characteristics in that school setting.

CHAPTER FOUR

RESULTS

This chapter includes a discussion of multiple baseline reading fluency data for the five student participants, a summary of the intervention implementation integrity, and a summary of the social validity outcomes. The chapter will present multiple baseline data through visual presentation, visual analysis, descriptive statistics, and results of hierarchical linear modeling analysis. Additionally, this chapter will present data on the treatment integrity and social validity of the study.

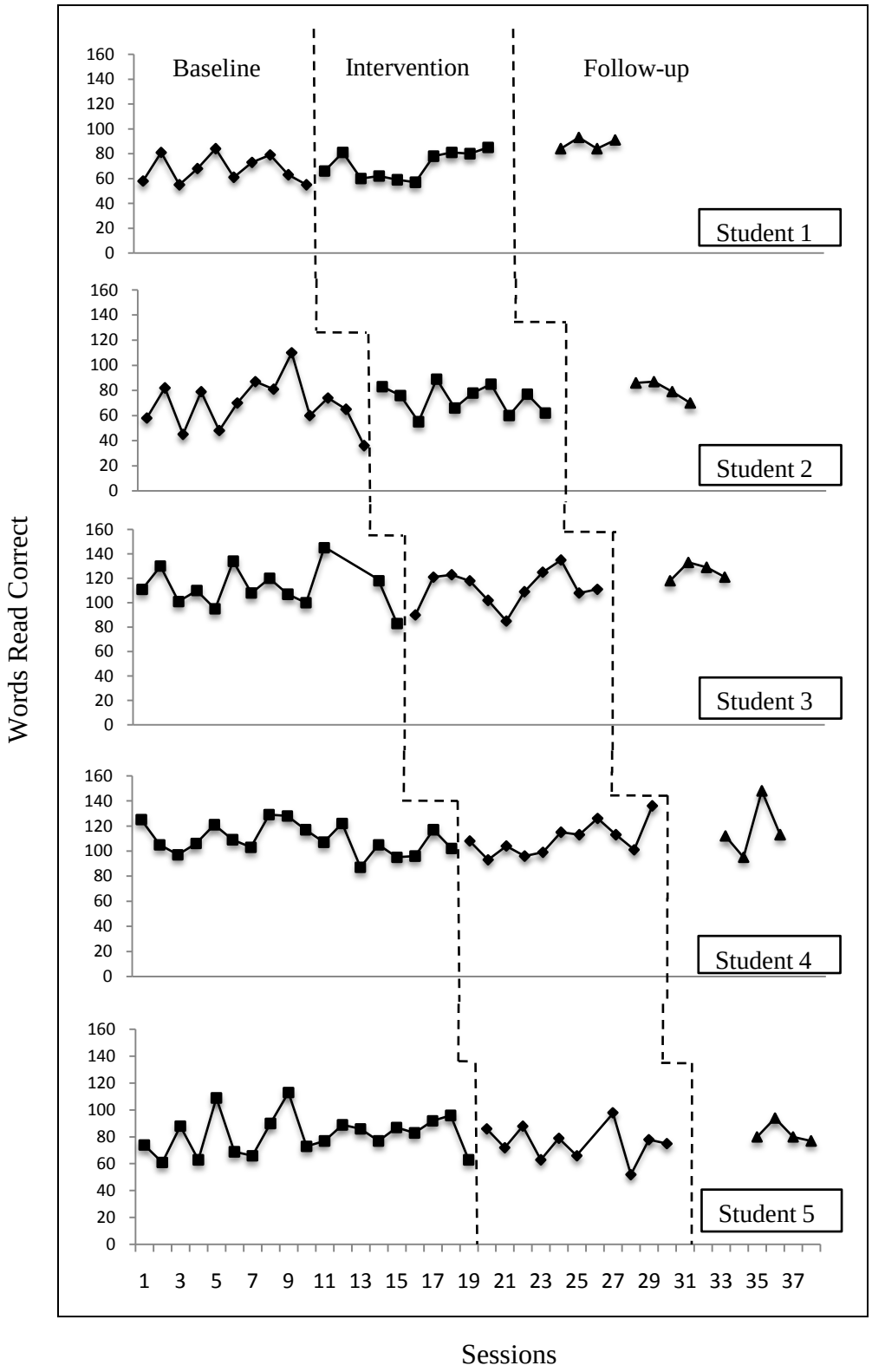
Visual Analysis and Descriptive Statistics

To assess the impact of the parent-implemented reading intervention on students' reading fluency skills, results were visually analyzed to examine any change in levels of performance, trendlines, or variability across phases. A graphical representation of the data for each student is provided in Figure 1. Examination of this graph reveals considerable variability within all phases, and considerable overlap between phases, for each of the students. Because of the variability, trendlines would have to be very pronounced in order to confidently conclude that fluency skills were linearly increasing or decreasing. For example, in order to confidently conclude the direction of the baseline data, with this much variability, visual analysis should clearly indicate a trend in the data. A more pronounced trendline would allow more confidence that, if another data point were collected it would not be likely to change the direction of the trendline. As the

trendlines were not so pronounced, it was decided not to use trendlines in the visual analysis.

Figure 1.

Words Read Correct Per Minute Across Participants



Student 1

Descriptive statistics summarizing the variability of data points and the mean level of performance in each phase (i.e., baseline, intervention, and follow-up) for Student 1 are presented in Table 1. The standard deviation and range of data indicated a significant amount of variability in each phase. The data collected during the baseline and intervention phases were slightly more variable than the data collected during the follow-up phase.

While considerable overlap prevents any obvious observation of level change in the visual analysis (Figure 1), descriptive statistics provide some indication of change. As can be seen in Table 1, when comparing baseline to intervention, the mean level of WRC for Student 1 increased from the baseline phase (M = 67.7 WRC) to the intervention phase (M = 70.9 WRC). This is an increase in mean data of 3.64 WRC from baseline to intervention phase. As sudden changes between levels may not occur in studies of academic skills, means from the end (last two data points) of each phase were also compared. From the end of the baseline phase (M = 59 WRC) to the end of the intervention phase (M = 82.5), there was a change in level of 23.5 WRC.

When comparing the mean level of performance between intervention and follow-up, the mean level of WRC for Student 1 increased from the intervention phase (M = 70.9 WRC) to the follow-up phase (M = 88 WRC). This indicates an increase of 16.56 WRC over the intervention phase. From the last week of the intervention phase (M = 82.5) to the follow-up phase (M = 88), there was an additional increase in level of 5.5 WRC.

Table 1.
Descriptive Statistics for Words Read Correct Per Minute for Student 1

	M	*SD*	*Min.*	*Max.*
Baseline	67.7	10.97	55	81
Intervention	70.9	11.02	57	85
Follow-Up	88	4.69	84	91

An analysis of the latency of change in performance suggests that an immediate improvement occurred at the time the intervention was introduced, from the last data point of baseline (55 WRC) to the first data point of intervention (81 WRC). An analysis of overlapping points indicate that all data points during intervention overlap with data points during baseline. Additionally, two data points in the follow-up phase overlap with data points in the first two phases. This is evident when examining Figure 1.

Student 2

Descriptive statistics summarizing the mean level of performance and variability in each phase for Student 2 are presented in Table 2. The standard deviation and range of data indicate a high amount of variability during the baseline, with somewhat less variability during the intervention phase. The data collected during follow-up phase appears less variable than the baseline and intervention phases.

Table 2 also indicates that this student's mean level of WRC increased from 68.85 WRC to 73.10 WRC from baseline to intervention. Additionally, Student 2 demonstrated a change in level from 50.5 WRC from the end of baseline to 69.5 WRC (increase of 19 WRC) at the end of the intervention phase. Student 2 also showed a mean increase of 7.4 WRC from intervention (M = 73.10 WRC) to follow-up (M = 80.5 WRC).

Table 2.

Descriptive Statistics for Words Read Correct Per Minute for Student 2

	M	*SD*	*Min.*	*Max.*
Baseline	68.85	19.93	36	110
Intervention	73.10	11.61	55	89
Follow-Up	80.50	7.85	70	87

An analysis of the latency of change for Student 2, indicated that there was an immediate improvement when considering the last data point of baseline and the first data point of intervention. The percentage of overlapping data points in intervention with data points in the baseline phase was 100%. Similarly, all data points collected during follow-up overlapped with the intervention phase data points. A visual representation of these data can be found in Figure 1.

Student 3

Descriptive statistics summarizing the mean level of performance and variability in each phase for Student 3 are presented in Table 3. Again, variability is present in the data collected across phases. Variability is most evident in the baseline phase, with a range from 83 to 145 WRC.

This student's mean WRC, as seen in Table 3, actually decreased .91 WRC from a baseline level of 112.46 WRC to an intervention level of 111.55 WRC. However, this student displayed a positive change of level of 12.79 WRC from baseline data collection (M = 112.46) to mean level of performance during follow-up (M = 125.25 WRC). Examination of the mean data points during the last weeks of baseline and intervention phases also indicates a negative change of 9 WRC. However, comparing mean scores of the final week of baseline to the mean score in the follow-up phase indicates an increase of 24.75 WRC.

Table 3.

Descriptive Statistics for Words Read Correct Per Minute for Student 3

	M	*SD*	*Min.*	*Max.*
Baseline	112.46	16.92	83	145
Intervention	111.55	15.08	85	135
Follow-Up	125.25	6.95	118	133

An analysis of the latency of change in performance indicates an increase of 7 WRC after the introduction of the intervention. All data points collected across the three phases overlapped, as is evident in Figure 1.

Student 4

In Table 4, the descriptive statistics are summarized for Student 4, indicating variability and mean scores across phases. The standard deviation and range of data again indicate a significant amount of variability, consistent with the data presented for the first three student participants.

When comparing baseline to intervention, the mean level of WRC for Student 4 remained approximately the same in the intervention phase as compared to the baseline phase (see Table 4). From the end of the baseline phase (M = 109.5 WRC) to the end of the intervention phase (M = 118.5 WRC), there was a change in level of 9 WRC.

When comparing the mean level of performance between intervention and follow-up, the mean level of WRC for Student 4 increased. In the follow-up phase this student's mean score (M = 117 WRC) increased by 8.5 WRC over the intervention phase. However, from the last week of the intervention phase (M = 118.5) to the follow-up phase (M = 117), there was a decrease in level of 1.5 WRC.

Table 4.

Descriptive Statistics for Words Read Correct Per Minute for Student 4

	M	*SD*	*Min.*	*Max.*
Baseline	109.5	12.31	87	129
Intervention	109.45	13.03	93	136
Follow-Up	117	22.26	95	148

An analysis of the latency of change in performance suggests that an immediate improvement occurred at the time the intervention was introduced, from the last data point of baseline (102 WRC) to the first data point of intervention (108 WRC). The percentage of nonoverlapping data points between the intervention and baseline phases was 9%, with only one data point in intervention not overlapping with baseline data points. There was also one data point in follow-up that did not overlap with data points in previous phases. This considerable variability and overlap for Student 4 are presented Figure 1.

Student 5

Descriptive statistics summarizing the mean level of performance and variability in each phase for Student 5 are presented in Table 5. The standard deviation and range of data are consistent with previous students', indicating a high amount of variability during both baseline and intervention phases. Data collected during the follow-up phase appears less variable than the baseline and intervention phases.

Data in Table 5 indicate this student's mean level of WRC decreased from baseline (M=81.89 WRC) to intervention (M=72.64 WRC). Additionally, Student 5 demonstrated a change in level from 79.5 WRC from the end of baseline to 76.5 WRC (decrease of 3 WRC) at the end of the intervention phase. Student 5 showed a mean increase of 7.11 WRC from intervention (M=75.64 WRC) to follow-up (M=82.75 WRC).

Table 5.

Descriptive Statistics for Words Read Correct Per Minute for Student 5

	M	*SD*	*Min.*	*Max.*
Baseline	81.89	14.83	61	113
Intervention	75.64	12.66	52	98
Follow-Up	82.75	7.63	77	94

An analysis of the latency of change for Student 5 indicated that there did appear to be immediate improvement when considering the last data point of baseline and the first data point of intervention, from 63 WRC to 86 WRC. For Student 5, the percentage of overlapping data points across baseline and intervention phases was 100%. All data points collected during follow-up overlapped with the intervention phase data points as illustrated in Figure 1.

Hierarchical Linear Modeling

Traditionally in single subject research designs, analyses of data are limited to the presentation of descriptive statistics and graphs with inferences based on visual inspection, but seldom using a measure of effect (Van den Noorgate & Onghena, 2003). To determine if the effects noted in the graph and summary statistics were statistically significant in this study, however, the data were analyzed using multiple baseline hierarchical linear modeling (HLM). While HLM was designed for situations with larger numbers of units (i.e. participants), recent research indicates its utility for single-case designs as well as it provides a means of synthesizing results across cases. Van den Noorgate and Onghena (2003) suggest that estimates of individual effect magnitudes in single case studies can be improved when the strength from multiple cases are shared by using HLM. Thus, these more formal decision-making analyses were selected to strengthen the results of this single-cases study. By combining the results of the

individual cases, using HLM, group parameters could be estimated, and individual parameters could be tested more efficiently.

For the purposes of this study, the hierarchical model was used to examine the average change in level, the variance in baseline levels, and the variance in treatment effects (changes from baseline to intervention and changes from baseline to follow-up). At level one reading scores were modeled as a function of what phase the student was in. For each student at Level 1:

$$Reading = \pi_0 + \pi_{1phase1} + \pi_{2phase2} + e$$

where π_0 is the reading level during baseline, π_1 is the shift in reading level from baseline to intervention, and π_2 is the shift in reading level from baseline to follow-up.

At Level 2, each of the coefficients from the Level 1 model was allowed to vary across participants:

$$\pi_0 = \gamma_0 + u_0$$

$$\pi_1 = \gamma_1 + u_1$$

$$\pi_2 = \gamma_2 + u_2$$

where γ_0 is the average baseline level of reading and μ_0 is the deviation of a particular participant from the average value. In this equation, γ_1 is the average shift from baseline to intervention and μ_1 is the deviation of a particular participant from the average value. Finally, γ_2 is the average shift from intervention to follow-up and μ_2 is the deviation of a particular participant from the average value.

Table 6 provides a summary of the fixed effects and variance components. According to the model, introduction of the intervention produced an average effect size, γ_1, of -.01 (SE= 2.49, p>.05), indicating that there was not a significant difference in the

average number of words that students read correctly during the intervention phase as compared to the baseline phase. The average increase in effect from baseline to follow-up, γ_2, however, was 10.55 (SE= 3.46, p<.05). This suggests that, on average, students read 10.55 more words correctly during the follow-up phase than they did during the baseline phase, and that this is a statistically significant difference. Variance estimates of 430.55 (SE=309.08, p>.05) at baseline, 0 (p>.05) from baseline to intervention and 0(p>.05) from baseline to follow-up indicated no significant variance among participants at baseline or in changes from baseline to intervention or from baseline to follow-up phases. Results also indicated that the average variation within phase within participants was 186.31 (SE=22.43; p<.05). This confirms the variation which was evident in visual analysis (Figure 1) and descriptive statistics (Tables 1-5), with fluctuation in each student's scores evident within each phase.

Table 6.
Covariance and Fixed Effects

	Parameter Estimate	SE	test statistic	p
Fixed Effects			t	
Average baseline level				
Average change from baseline to intervention	-.01	2.49	0	>.05
Average change from baseline to follow-up	10.55	3.46	3.05	<.05
Variance Components			z	
Variation in baseline level	430.55	309.08	1.39	>.05
Variation in change from baseline to intervention	0	-	-	>.05
Variation in change from baseline to follow-up	0	-	-	>.05
Within person variation	186.31	22.43	8.31	>.05

In summary, these data indicate that (1) there was not a statistically significant change in the average number of words read correctly by student participants from the baseline to the intervention phase, (2) there was a statistically significant change in the

average number of words read correctly from baseline to follow-up phase, (3) there was not significant variability among students' baseline levels or intervention effects, and (4) there was significant variation within participants' scores not accounted for by the intervention.

Treatment Integrity

Treatment Integrity

Intervention implementation integrity was examined using an intervention session checklist which parents were instructed to complete after each intervention session, and tape recordings of intervention sessions.

All parents completed an intervention activities checklist after each intervention session implemented. Each checklist included space to record the date, beginning and ending time, number of words read correctly, whether the child reached his/her individual goal, whether progress was graphed for the session, and if the session was tape recorded. Additionally, spaces were provided for comments on how well the session went and any questions the parent had. A sample of the session checklist can be seen in Appendix H.

Analysis of the checklists indicated that parents did not implement the intervention with similar integrity. Completion of checklists ranged from 65% to 100%, indicating that number of intervention sessions completed by each dyad ranged from thirteen to twenty sessions. Additionally, all components of the checklist were not completed for each checklist that was recorded. The sections of the form that were often not completed included: date (19% of recorded checklists did not include date) and time (42% not included). It is notable that 14 of the 16 incomplete dates were on Student 5's checklists. Table 7 provides information regarding the number of checklists completed,

sections completed for each student participant, and recorded average minutes per session.

Table 7.
Intervention Session Checklist Completion

Student	Checklists Completed (out of 20)	% Date Recorded	% Time recorded	% WRC recorded	Avg minutes per session
01	13	100%	92%	100%	6 min
02	17	88%	41%	100%	6 min
03	20	100%	85%	100%	17 min
04	16	100%	63%	100%	13 min
05	20	30%	15%	100%	4 min

Checklists also indicated when the parent participant received help in implementing the intervention from an additional person. For example, an acquaintance of Student 5's mother is indicated under parent's name on 70% of their completed checklists. In the comment section of Student 2's probes, the parent indicated that she had enlisted the help of her niece to implement the intervention.

The intervention activities checklist also contained a space for parents to indicate any opinions they had about the session. This space was completed on 88% of the checklists. Comments ranged from very brief (i.e., "ok" or "great!") to more extensive (i.e., "could possibly have done better. Need to work on diction and pronunciation.") There appeared to be themes in the types of comments made by each parent. For example, Parent 5 tended to be brief while the comments from Parent 2 tended to summarize the sessions (i.e. "(Student) struggled a little but in the end she met her goal." Parent 3 had a tendency to write either "good" or a more detailed explanation of how the student could have done better. Parents of Students 1 and 4 usually made very positive comments and often included smiley faces. One parent also used the comment section to request probes to continue the intervention after the intervention phase. None of the

parents wrote down questions in the space provided on the forms, nor did they call the researcher with any questions about the implementation of the intervention.

The checklists provided additional information about the integrity of intervention implementation. For example, parents were instructed to implement the intervention once a day on four separate days during the week. Sometimes parents would implement the intervention multiple times in one day. When this occurred, it would tend to happen the day before the researcher was scheduled to pick up recordings and checklists. When the researcher noticed this, parents were reminded to try to implement the intervention on four separate days each week. The researcher did emphasize, however, that it was important that if the dyad did implement multiple intervention sessions in one day, the correct date should be recorded on the checklist.

Another indication that the intervention may not have been implemented correctly was found on the checklists when the total amount of time reported for the session was too brief - for example, 2 minutes. As the intervention requires time for the parent to read instructions, one minute per probe read (for up to three probes), parent feedback, and graphing progress, either the time recorded was not accurate for these sessions or the intervention was implemented incorrectly. This incident (reporting sessions lasting 2 or 3 minutes) occurred three of seven recorded times for Student 2, and two of three recorded times for Student 5.

Overall, the intervention checklists completed indicated that there was some variance in how many intervention sessions were completed by each parent. They also indicated there was variance between dyads in the average amount of time spent on intervention sessions. The checklists also indicated that parents did appear to be

implementing the repeated readings portion of the intervention as instructed, requiring that the student re-read probes until either the individual goal was met or three probes were read. Finally, the checklists provided some indication about which dyads appeared to have the highest treatment integrity. Based on the information provided in these checklists, it appeared that Dyads 3 and 4 implemented the intervention with the highest integrity, completing 17-20 sessions, spending an average at least 13 minutes per session, and consistent implementation by the trained parent (rather than enlisting the assistance of someone else to implement the intervention). Dyad 2 also had higher implementation integrity considering the number of checklists completed (17), but the average minutes recorded for each session was low (6 minutes). Dyad 1 provided the fewest completed checklists with low average minutes per session (6 minutes), but did complete checklists as instructed and provided recordings for almost all sessions (92%) conducted. Dyad 5 partially completed 20 checklists, but indications of compromised integrity included: only partial completion of checklists, multiple sessions implemented by someone other than the trained parent, low average minutes per session (4 minutes) and indication on checklists that recordings were not provided for 85% of sessions.

In order to further assess the internal validity of this study, dyads were provided with equipment to record each intervention session. For three of the five dyads (Dyads 1, 3, and 4) the recordings coincided with the information provided from the checklists, indicating that Dyad 1 completed 50% of the 20 intervention sessions, Dyad 3 completed 100% of sessions, and Dyad 4 completed 80%. Dyad 3 indicated that they had forgotten to record 3 of the 17 sessions that they had provided checklists for, so recordings for those sessions were not provided. Dyad 5 completed a checklist for each of the 20

intervention sessions, but reported that they forgot to tape 3 of the first 12 sessions. They provided recordings for the remaining 9 of those first 3 weeks of sessions. Dyad 5 also reported that the tapes broke while recording in the last two weeks of the intervention phase, so that recordings were not provided for the last 8 sessions.

In addition to providing evidence that sessions had been conducted, the recordings also provided information about the integrity with which the intervention was implemented. The researcher listened to all tapes provided by the dyads, observing that each parent provided corrective feedback and specific praise as they had been instructed. Additionally, it was evident from the recordings when multiple sessions were recorded in one day, as there was no break in recording between these sessions. Finally, the recordings also provided evidence for the social validity of the intervention by capturing the positive interactions, encouraging remarks, and laughter between parent and child, between probe readings and before the dyads stopped the recording at the end of the session.

Social Validity

To examine participants' perceptions of the reading intervention, each student and each parent completed a brief social validity scale. The Child Social Validity Scale is described in Chapter Three. Student responses to the six questions on the scale were examined qualitatively and are discussed narratively. Table 8 summarizes student responses to the Child Social Validity Scale. All five students pointed to the happy face to indicate that they felt the reading program helped them to read better and that they liked the reading program When asked if they thought the reading program would be good to use with other children, four students indicated that they thought it would, while

one student indicated a neutral response. Two students felt that this is the best program to help them improve their reading, while two students indicated that there are better programs to help with their reading difficulty and one student indicated a neutral face in response to this question. In regards to whether their parents were too strict with them during the reading intervention two students indicated that their parents were too strict, while the remaining students did not perceive their parents to be too strict. Finally, when asked if they felt the reading intervention would help them to do better in school, four students indicated that it would, while one student was indicated a neutral response.

Table 8.
Child Social Validity Scale

Question	**Student**	**Yes**	**Maybe**	**No**
Helped read better	Student 1	Yes		
	Student 2	Yes		
	Student 3	Yes		
	Student 4	Yes		
	Student5	Yes		
Good to use with other children	Student 1	Yes		
	Student 2	Yes		
	Student 3		Maybe	
	Student 4	Yes		
	Student5	Yes		
This is best program to help with reading	Student 1	Yes		
	Student 2	Yes		
	Student 3		Maybe	
	Student 4			No
	Student5			No
Parents too strict	Student 1			No
	Student 2	Yes		
	Student 3	Yes		
	Student 4			No
	Student5			No
Liked the reading intervention	Student 1	Yes		
	Student 2	Yes		
	Student 3	Yes		
	Student 4	Yes		
	Student5	Yes		

Parent participants also completed a social validity scale, answering 12 questions on the Parent Social Validity Scale and 3 open-ended questions. A description of the scale and its administration can be found in Chapter Three. These results are summarized in Table 9. The parent responses were also examined qualitatively and are described here narratively. All parent responses on the scale, which addresses feasibility, practicality and outcomes of the intervention, were positive. Parents 1, 2, and 4 answered "strongly agree" to all 12 items of the scale. Parents 3 and 5 responded "agree" to almost all questions on the social validity scale. The most positive responses were given to items indicating that parents would suggest the intervention to other parents, there were no negative side effects, the intervention would be beneficial to other children, and parents liked the procedures.

Table 9.
Parent Social Validity Scale

Question	**Parents Slightly Agree**	**Parents Agree**	**Parents Strongly Agree**
1. Acceptable intervention		3 5	1 2 4
2. Most parents would find it appropriate	5	3	1 2 4
3. Would suggest to other parents		5	1 2 3 4
4. Difficulty severe enough to warrant		3 5	1 2 4
5. Most parents would find suitable		3 5	1 2 4
6. Would be willing to continue		3 5	1 2 4
7. No negative side-effects		3	1 2 4 5
8. Appropriate for a variety of children	3	5	1 2 4
9. Good for children with similar difficulties		3 5	1 2 4
10. Liked the procedures		5	1 2 3 4
11. Good way to handle child's reading difficulty		3 5	1 2 4
12. Beneficial for other children		3	1 2 4 5

Note: Numbers in the table represent parent id numbers of those that provided each response

In response to the open ended question about what parents perceived as being most helpful about the intervention, several parents indicated having the materials readily available, or the packaging of the intervention, as most helpful. Timing passages, having the procedures explained clearly, and being able to monitor progress themselves also were indicated as being most helpful. Not having enough time was the only barrier identified for implementing the intervention, particularly because of time spent at their jobs or time needed to care for other children in the household. This barrier was identified by Parents 4 and 5. Each parent also provided additional comments:

"I think this was the most greatest idea that one could come up with… I really appreciate my part as a parent and my son's involvement with the intervention. I thank you for considering him for this project. And Renee was great. Thanks a bunch :)" - Parent 1

"My daughter enjoyed this program very much and she even told me she is much more confident in reading because of this program." - Parent 2

"Having the tutor be patient with my son was really enlightening. The tutor was helpful in answering any questions" – Parent 3

"This is one intervention that would help any child and would love to continue the sessions throughout the year." – Parent 4

"Tape recorder did not work." – Parent 5

Overall, the social validity scales, open-ended survey questions, and informal conversations indicated that the intervention was acceptable to parent and student participants. Further, these participants reported enjoying the intervention and finding it helpful in improving the students' reading.

CHAPTER FIVE

DISCUSSION

Summary of Results

Existing literature indicates the important influence that literacy has on students' outcomes in school and in life. Research has demonstrated that parent implemented interventions geared toward enhancing literacy skills have been found to be effective. Research has not been conducted, however, on a parent implemented intervention which specifically targets reading fluency for students who are experiencing a skills deficit in this particular area. The purpose of this study was to investigate the impact of a fluency intervention, Guided Repeated Readings, on the fluency skills of children with deficits in this reading subskill. It was hypothesized that students who received this parent reading intervention would show an increase in reading fluency skills, as measured by Curriculum Based Measures (CBM). This chapter includes a discussion of the results related to both the hypothesis and the existing literature. Additionally, this chapter addresses implications for research, limitations of the study, and implications for practice.

Student outcomes. The results of this study were based on the examination of multiple baseline data through visual presentation, visual analysis, descriptive statistics, and hierarchical linear modeling analysis. While results of the data indicated differential responses from the students, there was some degree of evidence that there was a positive change in fluency skills, particularly between the baseline and follow-up phases. The

average increase from baseline mean to follow-up mean was statistically significant, with an average increase in level of 10.55 words read correct (WRC) per minute.

Student 1, a third grade student, was initially identified as being moderately at risk for reading failure on his quarterly reading assessment in January 2007. A survey level assessment conducted at that time resulted in a score of 82 WRC. When baseline data were collected at the start of this study, this student's mean score decreased to 67.8 WRC. His mean score during the intervention phase increased only slightly to 70.9 WRC, but there was a change in level by the end of the intervention phase of 23.5 WRC. When considering that Fuchs et al. (1993) suggest that third grade students typically gain 1.08 words per week during the academic school year while being instructed in grade level materials, this gain may have some practical significance. If Student 1 exhibited a typical gain, even though he was not receiving reading instruction over his summer vacation, he would have been expected to increase 15.12 WRC over the 14 week period spanning from the beginning of baseline to the end of the intervention phase. Additionally, this student's mean score at follow-up was 88 WRC, an increase of 5.5 WRC from the end of the intervention phase. Further, research indicates that students' test scores tend to decline over summer vacation (i.e., "summer fall-off"), with more severe negative impact on lower-income and minority students and struggling readers (Allington & McGill-Franzen, 2003; Cooper, Nye, Charlton, Lindsay, Greathouse, 1996; USDOE, 2002). Thus, this student's increase in scores from baseline to follow-up is a particularly positive outcome.

Visually analyzing the graphed data, the variability and overlap between phases makes it difficult to draw any conclusions associating the changes in scores with the

implementation of the intervention. However, it is noteworthy that there appears to be less variability, and Student 1 achieves consistently higher scores, towards the end of the intervention phase and during the follow-up phase. As students acquire fluency skills, they use these skills more proficiently and smoothly, exhibiting less variability (Daly, Lentz, & Boyer, 1996). It is hypothesized that the decrease in variability towards the end of the study may also be an indicator of improved fluency skills for Student 1. Despite this student's increases in reading scores, he did not reach the predetermined goal of 110 WRC, the beginning of the FCRR range for third grade students at low risk for reading failure (110-120 WRC).

While not definitive, consideration of individual differences in the implementation or perception of the intervention may help to partially explain individual differences in level changes during intervention and follow-up. The Student 1 dyad completed 13 of the 20 intervention sessions (65%). They missed sessions 2-4, and then several more sessions during the intervention phase when they reportedly lost the intervention binder. The researcher provided a new binder for the dyad so that they could resume the intervention sessions. This dyad spent an average of 6 minutes per intervention session, with a range from 5-12 minutes. When the intervention procedures were piloted by the researcher prior to the commencement of the study, the intervention generally lasted 15-20 minutes. As the student exhibited less variability and consistently higher scores in the last two weeks of the intervention phase and in follow-up, it is possible that the intervention would have had a stronger and more positive effect if more intervention sessions had been implemented and if the dyad had spent more time in the

intervention session (i.e., providing more time for specific feedback, praise, progress monitoring).

Although variability and overlap in data make it difficult to draw conclusions that positive changes in reading skills were a direct result of the intervention, it is noteworthy that a positive change in level and a decrease in variability occurred towards the end of intervention and in the follow-up phase. One explanation for this change is that the intervention was implemented more consistently the intervention later in the study, as indicated by the dyad's completion of session checklists. Additionally, the delay in reading skills improvement and decreased variability indicates that the intervention sessions may have had a cumulative effect, so that significant and consistent results may only become evident after several weeks of implementation. This finding is consistent with previous research conducted by Fiala and Sheridan (2003), who concluded from their study with parent-implemented reading interventions that longer periods of intervention are needed to produce improved reading fluency scores and to begin to show stability in R-CBM data, reporting that their participants began to show improvement after 5-6 weeks of intervention.

In addition to showing some improvement in scores, both the parent and the child of Dyad 1 in the current study reported high social validity for the intervention, indicating the most positive possible responses to all questions on the social validity scales. Additionally, the mother verbally reported that she had previously been unable to interest her child in reading, but that he really enjoyed the intervention and was often the one to initiate the intervention sessions. She asked for more materials to continue the

intervention once the study was over. The researcher provided a new binder of intervention materials for the dyad at the end of the intervention phase.

Student 2, a second grade student, was identified as being at moderate risk for reading failure during her quarterly reading assessment on which she scored 64 WRC. For this student, an increase in mean WRC per minute was seen for each phase. As with Student 1, the increase was less pronounced from the baseline mean to the intervention mean than it was from baseline to follow-up. However, from the end of baseline to the end of the intervention phase, a span of 5 weeks, an increase of 19 WRC was observed. An increase of another 7.4 WRC was observed from intervention mean (73.10 WRC) to follow-up (80.5 WRC). According to Fuchs et al. (1993), the expected rate of gain with grade level reading instruction for this second grader would be 1.46 WRC per week, or 7.3 WRC over a five week period. When considering the research related to "summer fall-off," this increase in level suggests practical significance (Allington & McGill-Franzen, 2003; Cooper, Nye, Charlton, Lindsay, Greathouse, 1996; USDOE, 2002).

Because of the overlap and variability in the data, it is difficult to conclude that the positive change was due to the intervention. Examination of the graphs does reveal that variability appears to decrease across phases, just as it had for Student 1, possibly another indication of improved fluency skills (Daly et al., 1996). Despite this student's increases in reading rate, she did not reach the predetermined goal of 90 WRC, the beginning of the FCRR range for second grade students at low risk for reading failure (90-108 WRC).

Examination of the session checklists, recordings and social validity responses provide further information about the implementation and results. Dyad 2 indicated that

they implemented 17 of the 20 sessions (85%), and provided recordings for all but 4 of these sessions. Integrity of implementation was compromised because sessions were often completed on the same day. It appears that the intervention was actually implemented on only 5-7 days (with multiple sessions per day), rather than on 20 separate days. There is no current research to indicate whether multiple implementations of the repeated reading intervention in one day may have a positive or negative effect on reading measures. However, there is some suggestion by researchers and practitioners that the repetition of repeated readings could become uninteresting or frustrating to students (Homan et al., 1993; Wright, 2001). While current research does not indicate this is true for the intervention when it is implemented as designed, it is hypothesized that Student 2 found the intervention less interesting after several consecutive implementations, resulting in compromised outcomes. This may be confirmed by the mother's verbal and written reports that she felt that her child could have had higher scores during some sessions if she had not been tired. Frustration may also be indicated by the child's response in the social validity scale that her parent was "too strict." It is believed that the effects of the intervention would have been more positive if the intervention had been implemented more consistently as it was designed, with no more than one session per day.

An additional breech of implementation integrity for this dyad occurred during intervention sessions that were not tape-recorded. The parent reported having had a teenage niece implement the intervention on those days. Therefore, the researcher was unable to determine if the intervention was implemented as intended for those sessions. While enlisting the help of friends and family members can be helpful and adaptive for

busy parents, it is likely to have compromised the implementation integrity of an intervention being studied for effectiveness.

Additionally, this dyad spent an average of 6 minutes per session on the intervention, reporting a range of 2-10 minutes per session. Again, this is less than the expected 15-20 minutes. These brief intervention sessions may have resulted in less opportunity for positive and corrective feedback. The researcher hypothesizes that more time spent on each intervention session would have resulted in more positive gains in reading fluency.

The parent of Student 2 indicated that the only barrier to implementing the intervention was not having enough time, considering her work schedule, an infant, and preparing her oldest child for his first year of college. Despite this barrier, the parent responded with the most positive responses for all items on the social validity scale, indicating that she enjoyed the intervention and found it to be helpful. She also verbally reported that her daughter enjoyed the intervention, and that her daughter said she found it to be more helpful than other reading programs in which she had participated. Overall, the daughter's responses on the social validity scale were commensurate with her mother's report that she found it enjoyable and helpful.

Student 3 was a fourth grade student identified as being at moderate risk for reading failure when he scored 99 WRC on his quarterly reading assessment. By the end of the school year, he was expected to read 118 WRC in order to be considered at low-risk for reading failure. This student's baseline mean was 112.5 and he had a slight decrease in mean during the intervention phase of almost 1 WRC, and a decrease from end of baseline to end of intervention of 9 WRC. However, as did the preceding

students, Student 3's scores increased from baseline to follow-up by 24.5 WRC. In comparison, over the course of the three phases (i.e., 17 weeks) the Fuchs model would indicate that, with regular reading instruction, the average student would have been expected to gain 14.28 WRC (.84 WRC per week). This positive change in level should be considered in light of research that would indicate an expected decrease in reading scores over the course of the summer (Allington & McGill-Franzen, 2003; Cooper et al., 1996). Additionally, Student 3 met his goal of at least 118 WRC at each data point collected during follow-up, with a mean of 125.3 WRC. Again, variability and overlap prevent conclusive decisions to be made about the relationship between the intervention and the increase in scores. A visual analysis of graphs, however, do indicated that variability decreased with each phase.

This dyad completed 100% of the intervention sessions and provided a recording for each session. Session checklists and recordings indicated that all sessions were completed on 13 days (two intervention sessions were completed on each of seven days, and one session was completed on each of the remaining six days). Again, it is hypothesized that a stronger and more positive effect on reading scores would result if only one intervention session had been implemented per day during the intervention phase.

The dyad spent an average of 17 minutes per session, with a reported range of 10-35 minutes, commensurate with the expected duration of the intervention sessions. The parent participant was invested in completing the intervention sessions, frequently traveling to conduct the sessions with her son on days that he was not at home. Several times over the course of the study, this parent called to confirm with the researcher when

materials would be picked up or when/where assessments would be conducted. Overall, verbal reports made by the mother, and responses on both the parent and child's social validity checklists, indicated that this dyad found the intervention helpful and enjoyable. The only negative response on either checklist was that the child found the parent to be "too strict" when implementing the intervention. The parent had two responses of slightly agree (that the intervention would be appropriate for a variety of children, and that most parents would find it appropriate for reading difficulties) while agreeing or strongly agreeing to the remaining 10 items on the parent social validity scale. Overall, it is hypothesized that the higher level of implementation integrity, the apparent dedication of the dyad to implement the intervention, and the reported enjoyment and belief in the effectiveness of the intervention were likely to have contributed to the improvement in reading scores over the course of the study.

Student 4 was a fourth grade student initially identified as being at moderate risk for reading failure when she read 92 WRC on her quarterly reading assessment. Her goal for the end of the year assessment was 118 WRC. During baseline data collection her mean was 109.5 and this mean remained the same during the intervention phase. Similar to the other participants, this student experienced a more pronounced positive change at follow-up reading 117 WRC, barely missing her goal of 118 WRC. Again considering the tendency for students to experience summer "fall-off," the gain in WRC per minute is considered a positive outcome. The overlap and variability in this student's data, however, again prevents any conclusive evidence that gains can be solely attributed to the intervention. Unlike the first three student participants, the variability did not appear to decrease over the course of the phases.

This dyad did not complete the first week of intervention sessions. They began the sessions in the second week, completing and recording all remaining sessions. They conducted 2 sessions one day during the intervention, but completed all other sessions on separate days, as instructed. The dyad recorded all the sessions completed and provided the researcher with the recordings weekly. They spent an average of 13 minutes per session, with a reported range of 10-20 minutes. This high integrity of implementation after the first week of the intervention phase is likely to have contributed to the increase in reading level that occurred late in the intervention phase and in follow-up.

Student 4 and her parent also had very positive responses on the social validity scales, indicating that they liked the program, felt that it was effective and that it was practical. Both the student and parent gave the highest possible rating to each response on their respective scales. These responses were supported by the mother's verbal remarks about how much they both liked the program and enjoyed the opportunity to work together, as well as by a "thank you" note written to the researcher by the student.

Student 5, a second grade student, seemed to experience the least amount of positive change over the course of the intervention study. She was identified as moderately at risk for reading failure during her quarterly reading assessment, reading 64 WRC. Her goal for the spring assessment was to read 90-108 WRC, in order to be considered at low-risk for reading failure. During the baseline phase, this student's mean was 81.89 WRC. The mean actually decreased to 75.64 during baseline, but increased again to 82.75 in the follow-up phase. Thus, unlike the first four student participants, this student did not experience a considerable gain in scores from the baseline phase to the follow-up phase. It is hypothesized that a positive change did not occur because

consistency and maintenance of implementation integrity seemed most difficult for this dyad.

The student's mother indicated that time was a factor that made implementation difficult, indicating several times that she was a single mom with a full time job and two children younger than the student participant also in the household. Additionally, the mother had an extended hospital stay during the intervention phase of the study, and needed to prepare for an unexpected move towards the end of the intervention phase, changing residences during follow-up phase. During her hospital stay, the mother enlisted the help of her boyfriend to implement the intervention. While all intervention checklists were completed, few were completed fully so that it was difficult to determine when the sessions were completed and how much time was spent on sessions. From the few checklists that indicated time, it appeared that sessions averaged only 4 minutes in length, with a range from 1-7 minutes. Additionally, tape recordings were not provided for most sessions. For some missing recordings, the dyad reported that they forgot to record the session. At the end of the intervention phase, the dyad reported that the tape recorder had broken the last 2 weeks of tapes. Therefore, it was not possible to assess the integrity with which the intervention was implemented during those times. For the sessions that were recorded, the caregiver implemented the intervention correctly, using corrective feedback and specific praise, as instructed. Additionally, the dyad seemed to enjoy the sessions – laughing and chatting between administrations and after the intervention procedures ended. Evidence of acceptability was also confirmed with the child and parent social validity scales. The child provided all positive responses on her 5 item scale. The parent also provided all positive responses, ranging from slightly agree to

strongly agree on the 12-item parent social validity scale. The only negative feedback that was given by the parent was that the recording equipment broke.

Relevance to Research Questions

Research question one. Will elementary students receiving the parent reading intervention show an increase in reading fluency skills, as measured by CBM, compared to baseline scores on these measures?

For Students 1-4, there was an increase in WRC from baseline to follow-up which contributed to the average statistically significant difference between these phases. Additionally, there was an increase in WRC from the end of baseline to the end of intervention phases for these same four students. Although this difference was not analyzed for statistical significance, for all four of these students the difference was greater than would be expected if the children had been receiving regular reading instruction (rather than receiving no instruction over the summer break). This has particular practical significance considering the research that indicates the tendency for students' reading scores to decline over the summer, with significantly more negative impact on at-risk students (Allington & McGill-Franzen, 2003; Cooper et al., 1996; USDOE, 2002). None of the students in this study exhibited a decrease in scores from the baseline phase to the follow-up phase.

A less positive result was the consistent finding that there was little, if any, positive change from baseline mean to intervention mean for the participants. While it is possible that the delayed change had no association with the actual intervention, it is hypothesized that this academic intervention will not have an immediate effect, but requires a longer period of implementation before positive outcomes are evidenced.

A consistent finding among all of the participants was the variability and the overlap between phases. While variability in WRC per minute is consistent with past research with students targeted for reading interventions (Fiala & Sheridan, 2003; Gilbert, Williams, & McGlaughlin, 1996), such variance and overlap makes it difficult to make conclusive statements about the effectiveness of the intervention. Further, variability presents specific challenges in a study employing a multiple-baseline design across subjects. The lack of stability in the baseline phase made it difficult to determine the opportune time to begin implementation of the intervention and to associate any changes or trends with the intervention. Additionally, in a study using multiple baseline design, the increase in scores between the last data point of baseline and the first data point of intervention that was evident among all participants is indicative of an immediate change in behavior with implementation of the intervention (Heward, 1987). However, with such variability and overlap as was seen in these data, the increase could not be reliably associated with the intervention.

Research question two. To what extent do participating parents find the parent reading intervention effective?

Another positive finding in this study was the social validity of the intervention. Parents suggested that the intervention was effective by agreeing that it was an acceptable intervention, that most parents would find it appropriate and suitable, it was a good way to handle their child's reading difficulty, and they would be willing to continue the intervention. Additionally, they reported liking the procedures. An intervention that is enjoyed by the parent and the student participant, and one that is considered to be

effective, is more likely to be implemented in the future (Lane & Beebe-Frankenberger, 2004; Witt & Elliott, 1985).

Research question three. What qualities of the parent reading intervention do these parents perceive to be most helpful?

Parents indicated that the most helpful aspects of the intervention included: the structure and packaging of the intervention - having all materials readily available and organized in a single binder, timing passages, having procedures explained clearly, and being able to monitor progress themselves. They also reported enjoying the time spent with their children and being able to help them.

Research question four. What do these parents consider to be the perceived barriers in implementing this intervention as it was designed?

Not having enough time was the only barrier identified for implementing the intervention. Parents reported that affording the time was particularly difficult because of time spent at their jobs and time needed to care for other children in the household. This barrier was reported by two of the five parent participants.

Research question five. To what extent do student participants find the parent reading intervention effective?

All students reported that the intervention helped them read better and that they liked the intervention. Students reported enjoying the individual attention received when their parents worked with them. Observations of the students smiling, laughing, talking before/after sessions supported their reports that they enjoyed the intervention and assessment sessions.

Implications for Research

The results of this study indicate that several areas warrant future research. First, the differential results suggest that a similar study should be conducted examining students who are within the same grade level. Previous research indicates that there is a correlation between grade level and effect size of negative impact of "summer fall-out" (Allington & McGill-Franzen, 2003; Cooper et al., 1996; USDOE, 2002), which could differentially impact students on different grade levels participating in a summer reading intervention.

Future research should also examine the effectiveness of the intervention when implemented with students of varying baseline reading skills. While the current study included participants at moderate risk for reading failure, it is possible that the intervention may be more or less effective with students who are at different risk levels. The current study also did not control for baseline levels of reading fluency skills. Future research may consider examining any differential effects for participants who exhibit varying skill levels during baseline data collection.

The current study could also be replicated using extended time for the intervention phase. As results of this study indicated increased reading scores at the end of the intervention phase and during the follow-up phase for most students, it is hypothesized that stronger intervention effects would be apparent if the duration of the intervention phase was increased.

Additionally, future research should attempt to control more for implementation integrity. If possible, completed session materials should be collected four times per

week (if the implementation is expected to be implemented four times per week). This may encourage dyads to complete one session per day rather than waiting until the end of the week to complete multiple sessions per day. The researcher could also help parents schedule the intervention sessions and/or provide reminder calls during the week. Digital recording, rather than audio taping, would provide accurate time and date information for each intervention session, contributing further to implementation integrity.

The current study could be replicated during the school year. Greater control would be obtained if dyads turned in probes daily rather than weekly. More frequent collection of probes would be more practical during the school year. More control could also be obtained if students were assessed across phases during the school year (rather than conducting baseline during the school year, and intervention and follow-up during a break, as occurred with the current study). Further, progress monitoring could be implemented in the same place and at the same time, in a quiet and conducive environment, for each data collection point. Parent contact could also be more frequent (i.e. through use of school-home notes or verbal check-in when parents drop off or pick up students), possibly improving implementation integrity. Additionally, a study that took place during the school year might have different results, as any positive effects of the intervention might not be mediated by the decreasing trend for reading scores that occurs over the course of the summer.

A final and unexpected topic for further research resulting from this investigation is the variability in data which occurred across all students and across all phases of the study. This concern first came up during baseline data collection, as the researcher waited for stability (i.e., consecutive scores that were close together), in order to begin

the intervention. The expected stability did not occur. The variability in scores in this study calls for further investigation of how much variability in R-CBM scores should be expected, and whether this differs between students at different reading levels (i.e., above average, low risk for reading failure, moderate risk, high risk). Future research could examine whether variability might be tempered by using three assessment probes per session and selecting the median. While the collection of multiple probes in a single session is practiced for survey level data, it is not common practice for on-going data collection (Ardoin, 2006).

Implications for Practice

The parent-implemented reading intervention introduced in the current study has implications for being a practical and effective reading intervention for struggling readers. The parent training could be implemented by a wide variety of education professionals, including school psychologists. Additionally school psychologists could train other professionals, such as teachers, to implement the training with parents. As the intervention is implemented by parents and occurs at home, this intervention does not take the child away from classroom time as do other school-based reading interventions. Further, it provides an opportunity for increased parent involvement, as is mandated by law for Title 1 schools and as best practice for all schools to strive for.

Another positive aspect of this intervention is that materials are simple and inexpensive to develop. The Guided Repeated Reading intervention is also relatively simple to learn. Parents learned the intervention quickly and were able to demonstrate the techniques correctly within a one hour training session. The intervention strategy is also already familiar to many educators (Homan et al., 1993).

With additional implementation integrity, this parent-implemented intervention may prove to be very effective as a summer strategy to reduce the negative impact on reading skills of extended time away from school. By giving parents a structured means to become involved in helping their children with reading, this intervention may be effective in combating the typical downward trend, especially in students who are at moderate risk for reading failure.

In contrast, practitioners may find more stability in data collection during the school year, when they can have a consistent time and place for progress monitoring. Implementation during the school year would also provide the opportunity to collect intervention session materials more frequently than once a week, in order to encourage stronger implementation integrity. Thus, this intervention may be even more simple, convenient, and effective to use during the school year.

Limitations

Several limitations to the present study should be considered when interpreting the results and considering suggestions for research and practice. These include statistical regression, implementation bias, and limited generalizability.

It is important to be aware that statistical regression may have occurred because students were selected due to their low reading scores. This statistical phenomenon occurs in intervention research when students are selected because of their extreme scores (i.e., low reading scores). As there is a tendency for more extreme scores to regress towards the mean, it is possible that results indicating an increase of scores may have been, at least partially, due to this statistical tendency. Thus statistical regression is yet another reason why positive changes cannot be solely attributed to the intervention.

Implementation bias also may interfere with the interpretation of results. This limitation addresses the likelihood that the parents did not implement the intervention with same level of integrity. This limitation was addressed by providing parents with training, recording intervention sessions, collecting intervention data weekly and providing feedback during intervention phase. However, the collection of intervention checklists and the recording of intervention sessions provided information that confirmed that implementation bias may have interfered with the control of this study.

Another threat to the external validity of this study is the lack of generalizability, due to the researcher's inability to collect a true random sample. Strict inclusion and exclusion criteria were used to select the participants for this study. These criteria, along with the use of single subject design in the study, limit the generalizibality of the results. Findings may not generalize across settings or conditions, but may be limited to students with similar demographic characteristics in this type of school setting.

Conclusion

This study explored the effects of a parent-implemented reading fluency intervention on the fluency skills of five elementary-aged children who were at moderate risk for reading failure. A statistically significant result was found in the average increase of words read correctly (WRC) per minute for the participants between the baseline phase mean and the follow-up phase mean. This, however, was the only statistically significant result. Remaining results indicated inconsistent intervention effects across participants, demonstrating the need for further research before this intervention can be promoted as a researched-based and effective intervention for reading fluency deficits. However, the parent reading intervention is a promising intervention to

provide an opportunity for parent involvement in improving the reading fluency of struggling readers.

References

Allington, R.L., McGill-Franzen, A. (2003). Use students' summer-setback months to raise minority achievement, *Education Digest,* 69(3), 19-24.

Anderson, R.C., Hiebert, E.H., Scott, J.A., & Wilkinson, I.A.G. (1985). *Becoming a nation of readers: The report of the Commission on Reading.* Washington, DC: National Academy of Education, Commission on Education and Public Policy.

Ardoin, S. (2006). The response in response to intervention: Evaluating the utility of assessing maintenance of intervention effects. *Psychology in the Schools , 43* (6), 713-725.

Barlowe, D.H., Hayes, S.C., & Nelson, R.O. (1984). *The scientist practitioner: Research and accountability in clinical and educational settings.* New York: Pergamon Press. *California Test of Basic Skills* (1980). New York: McGraw Hill.

Chafouleas, S.M., Martens, B.K., Dobson, R.L., Weinstein, K.S., & Gardner, K.B. (2004). Fluent reading as the improvement of stimulus control: Additive effects of performance-based interventions to repeated readign on students' reading and error rates, *Journal of Behavioral Education,* 132, 67-81.

Chard, D.J., Vaughn, S., & Tyler, B.J. (2002). A synthesis of research on effective interventions for building reading fluency with elementary students with learning disabilities. *Journal of Learning Disabilities*, 35(5), 386-406.

Clay, M. (1979). *The early detection of reading difficulties.* Portsmouth, NH: Heinemann.

Cooper, J.O., Heron, T.E., & Heward, W.L. (1987). *Applied behavior analysis.* New York: Macmillan.

Cooper, H., Nye, B., Charlton, K, Lindsay, J, & Greathouse, S. (1996). The effects of

summer vacation on achievement test scores: A narrative and meta-analytic review. *Review of Educational Research,* 66(3), 227-268.

Cornwall, A., & Bawden, H. (1992). Reading disabilities and aggression: A critical review. *Journal of Learning Disabilities*, 25, 281-299.

Daly, E.J. III, Lentz, F.E. Jr., & Boyer, J. (1996). The instructional hierarchy: A conceptual model for understanding the effective components of reading interventions. *School Psychology Quarterly, 11,* 369-385.

Deno, S. L., Mirkin, P., & Chiang, B. (1982). Identifying valid measures of reading. *Exceptional Children, 49,* 36-45.

Department of Education (2004). Parental Involvement: Title I, Part A Non-Regulatory Guidance. Retrieved November 28, 2005 from http://www.ed.gov/programs/titleiparta/parentinvguid.doc

Dowhower, S.L. (1987). Effects of repeated reading on second-grade transitional readers' fluency and comprehension. *Reading Research Quarterly,* 22(4), 389-406.

Dunn, L., & Dunn, L. (1981). *Peabody Picture Vocabulary Test- Revised.* Circle Pines, MN: American Guidance Services, Inc.

Dunn, L., & Markwardt, F. (1970). *Peabody Individual Achievement Test.* Circle Pines, MN: American Guidance Service.

Duvall, S.F., Delquadri, J.C., Elliott, M., & Hall, R. Vance (1992). Parent-tutoring procedures: Experimental analysis and validation of generalization in oral reading across passages, settings, and time. *Journal of Behavioral Education,* 2(3), 281-303.

Epstein, J. L. (1996). Perspectives and previews on research and policy for school, family, and community partnerships. In A. Booth, & J. F. Dunn (Eds.), Family-school

links—How do they affect educational outcomes? (pp. 209–246). Mahwah, NJ: Lawrence Erlbaum.

Epstein, J. L. (2002). School, family, and community partnerships: Caring for the children we share. In J.L. Epstein, M. G. Sanders, B. S. Simon, K.C. Salinas, N. R. Jansorn, & F. L. VanVoorhis (Eds.), School, Family, and Community Partnerships: Your Handbook for Action (pp. 7-29). Thousand Oaks, CA: Corwin Press.

Fiala, C. L., & Sheridan, S. M. (2003). Parent involvement and reading: Using curriculum based measurement to assess the effects of paired reading. *Psychology in the Schools*, 40(6), 613-626.

Fletcher, J.M. & Lyon, G. R. (1998). Reading: A research-based approach. In William M. Evers (Ed). *What's Gone Wrong in America's Classrooms.* Hoover Institution Press. Retrieved November 28, 2005 from http://www.nichd.nih.gov/about/crmc/cdb/approach.pdf

Francis, D. J., Shaywitz, S. E., Stuebing, K. K., Shaywitz, B. A., & Fletcher, J. M. (1996). Measurement of change: Assessing behavior over time and within developmental context. In G. R. Lyon (Ed.), *Frames of reference for the assessment of learning disabilities: New views on measurement issues* (pp. 29-58). Baltimore: Brookes.

Fuchs, L.S., & Deno, S.L. (1992). Effects of curriculum within curriculum-based measurement. *Excellent Children*, 58, 232-242.

Fuchs. L.S. & Deno, S.L. (1994). Must instructionally useful performance assessment be based in the curriculum? *Exceptional Children*, 61(1), 15-24.

Fuchs, L.S., Fuchs, D., Hamlett, C.L., Walz, L. & German, G. (1993). Formative

evaluation of academic progress: How much growth can we expect. *School Psychology review*, 22, 24-48.

Fuchs, D., Fuchs, L., Yen, L., McMaster, K., Svenson, E., Yang, N., Young, C., Morgan, P., et al. (2001). Developing first-grade reading fluency through peer mediation. *Teaching Exceptional Children*, Nov/Dec, 90-93.

Galloway, J., & Sheridan, S. M. (1994). Implementing scientific practices through case studies: Examples using home-school intervention and consultation. *Journal of School Psychology*, *32*, 385-413.

Gang, D. & Poche, C. E. (1982). An effective program to train parents as reading tutors for their own children. *Education and Treatment of Children*, 5, 211-232.

Gilbert, L.M., Williams, R.L., & McLaughlin, T.F. (1996). Use of assisted reading to Increase correct reading rates and decrease error rates of students with learning disabilities. *Journal of Applied Behavior Analysis*, 29, 255-257.

Glass, G.V. & Hopkins, K.D. (1996). *Statistical Methods in Education and Psychology.* Boston; Allyn and Bacon.

Good, R.H., Simmons, D.C., Kame'enui, E.J., Kaminski, R.A., & Wallin, J. (2002). *Summary of decision rules for intensive, strategic, and benchmark instructional recommendations in kindergarten through third grade* (Technical Report No. 11). Eugene, OR: University of Oregon.

Good, R.H., Simmons, D.C., & Smith, S.B. (1998). Effective academic interventions in the United States: Evaluating and enhancing the acquisition of early reading skills. *School Psychology Review, 27 (1),* 45-56.

Hahr, M. The random number service. Retrieved June 14, 2006 from

http://www.random.org/

Hannon, P. (1987). A study of the effects of parental involvement in the teaching of reading on children's reading test performance. *British Journal of Educational Psychology*, 57, 56-72.

Henderson, A. T. & Mapp, K. L. (2002). A new wave of evidence: The impact of school, family, and community connections on student achievement. Austin, TX: Southwest Educational Development Laboratory.

Herman, P.A. (1985). The effect of repeated readings on reading rate, speech pauses, and word recognition accuracy. *Reading Research Quarterly,* 20(5), 553-565.

Heward, W. (1987). Production and Interpretation of Graphic Data Displays. In J. Cooper, T. Heron, & W. Heward (Eds.), *Applied Behavior Analysis* (pp. 107-141). Upper Saddle River, NJ: Merril.

Holdaway, D. (1979). *The foundations of literacy.* Sydney, NY: Heinemann Educational Book.

Howe, K.B. & Shinn, M. M. (2002). *Standard reading assessment passages for use in general outcome measurement: A manual describing development and technical features.* Eden Prairie, MN: Edformation.

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80 (4),* 437-447.

LaBerge, D., & Samuels, S. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6,* 293-323.

Lane, K.L., Beebe-Frankenberger, M.E., Lambros, K.M., Pierson, M. (2001). Designing effective interventions for children at-risk for antisocial behavior: An integrated

model of components necessary for making valid inferences. *Psychology in Schools,* 38(4), 365-379.

Lyon, G. R. (1995). Research initiatives and discoveries in learning disabilities: Contributions from scientists supported by the National Institute of Child Health and Human Development. *Journal of Child Neurology,* 10 (Suppl.1), S120-S126.

Lyon, G. R. (1998). Overview of reading and literacy initiatives. Accessed June 22, 2006 from http://www.nichd.nih.gov/publications/pubs/jeffords.htm

Karlsen, B., Madden, R., & Gardner, E.F. (1975). *Stanford diagnostic reading test.* New York: Harcourt Brace Jovanovich.

Kazdin, A. E. (1978). Methodological and interpretative problems of single-case experimental designs. *Journal of Consulting and Clinical Psychology,* 46(4), 629-642.

Kazdin, A. E. (1982). *Single-case research designs: Methods for clinical and applied settings.* New York: Oxford.

MacGinitie, W.H., & MacGinitie, R.K. (1992). *Gate-MacGinitie reading tests (*2nd Canadian ed.). Toronto, Canada: Nelson Canada.

Mann, V.A., Tobin, P., & Wilson, R. (1987). Measuring phoneme awareness through invented spellings of kindergarten children. *Merrill-Palmer Quarterly,* 33, 365-391.

Marston, D. B. (1989). A Curriculum-based measurement approach to assessing academic performance: What it is and why we do it. In M. R. Shinn (Ed.), *Curriculum-based measurement: Assessing special children* (pp. 18-78). New York: Guilford Press.

Martens, B.K., & Witt, J.C. (1982). *The intervention rating profile.* Copyrighted manuscript, University of Nebraska-Lincoln.

Mastropieri, M.A. & Scruggs, T. E. (1997). Best practices in promoting reading comprehension in students with learning disabilities. Remedial and Special Education, 18(4), 197-213.

Morrow, L.M. (1997). *Literacy development in the early years: Helping children read and write (3rd ed).* Boston: Allyn & Bacon.

Morrow, L., & Young, J. (1997). A family literacy program connecting school and home: Effects on attitude, motivation, and literacy achievement. *Journal of Educational Psychology*, 89, 736-742.

Naslund, R.A., Thorpe, L.P., & LeFevre, D.W. (1978-1981). *SRA Achievement Test.* Chicago: Scientific Research Associates, Inc.

National Assessment of Educational Progress (2002). *The nation's report card: Fourth grade students reading aloud: NAEP 2002 Special study of oral reading.* Retrieved on June 21, 2006 from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006451

National Assessment of Educational Progress (2005). *The Nation's Report Card: Reading 2005.* Retrieved on June 21, 2006, from http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2006451

National Center for Education Statistics (2005). *Reading Results: Executive Summary for Grades 4 and 8.* Retrieved June 15, 2006, from http://nces.ed.gov/nationsreportcard/nrc/reading_math_2005/s0002.asp?printver

National Reading Panel (2000). Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Retrieved June 15, 2006, from http://www.nationalreadingpanel.org/Publications/publications.htm

Onwuegbuzie, A. J. (2003). Expanding the framework of internal and external validity in quantitative research. *Research in the Schools*, 10(1), 71-89.

O'Shea, L.J., Sindelar, P.T., & O'Shea, D.J. (1985). The effects of repeated readings and attentional cues on reading fluency and comprehension. *Journal of Reading Behavio, 17,* 129-142.

O'shea, L.J., Sindelar, P.T., & O'Shea, D.J. (1987). The effects of repeated readings and attentional cues on the reading fluency and comprehension of learning disabled readers. *Learning Disabilities Research, 2,* 103-109.

Payne, A., Whitehurst, G., & Angell, A. (1994). The role of home literacy environment in the development of language ability in preschool children from low-income families. Early Childhood Research Quarterly, 9, 427–440.

Persampieri, M., Gortmaker, V., Daly, E., Sheridan, S. & McCurdy, M. (2006). Promoting parent use of empirically supported reading interventions: Two experimental investigations of child outcomes. *Behavioral Interventions,* 21, 31-57.

Powell-Smith, K. & Bradley-Klug, K. (2001). Another look at the "C" in CBM: Does it really matter if curriculum-based measurement reading probes are curriculum-based? *Psychology in the Schools,* 38(4), 299-312.

Powell-Smith, K. A., Shinn, M. R., Stoner, G., & Good, R.H. (2000). Parent tutoring in reading using literature and curriculum materials: Impact on student reading achievement. *School Psychology Review,* 29(1), 5-27.

Psychological Corporation. (1989). *Stanford early school achievement test* (3rd ed.). San Antonio, TX: Harcourt Brace Jovanovich.

Roberts, M. L., Marshall, J., Nelson, J. R., & Albers, C. A. (2001). Curriculum-based

assessment procedures embedded within functional behavioral assessments: Identifying escape-motivated behaviors in a general education classroom. *School Psychology Review*, 30(2), 264-277.

Senechal, M., & LeFevre, J. (2002). Parental involvement in the development of children's reading skill: A five-year longitudinal study. *Child Development,* 73(2), 445-460.

Shapiro, E.S. (2004). Academic skills problems: Direct assessment and intervention (3rd ed.). New York: The Guilford Press.

Shinn, M. R. (1998). Advanced applications of curriculum-based measurement. New York, NY: Guilford.

Shinn, M. R., Good, R. H., Knutson, N., Tilly, W. D., & Collins, V. L. (1992). Curriculum-based measurement of oral reading fluency: A confirmatory analysis of its relation to reading. *School Psychology Review*, 21, 459-79.

Shinn, M., Johnston, D., Malmquist, S., & Sweetland-Baker, M. (Eds.). (1993). *CBM training module: Administration and scoring of curriculum-based measurement.* Unpublished manuscript, University of Oregon.

Shinn, M. R., & Shinn, M. M. (2002). *AIMSweb training workbook: Administration and scoring of Reading Curriculum-Based Measures (R-CBM) for use in general outcome measurement.* Retrieved on November 14, 2004 from http://www.aimsweb.com/_lib/documents/AdminandScoringR-CBM08252002.pdf

Shinn, M.R., Walker, H.M., & Stoner, G. (2002). Interventions for academic and behavior problems II: Preventive and remedial approaches. Bethesda, MD: National Association of School Psychologists.

Shuck, A., Ulsh, F., & Platt, J. (1983). Parents encourage pupils (PEP): An innercity parent involvement reading project. *The Reading Teacher,* 1, 525-527.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences in individual differences in the acquisition of literacy. *Reading Research Quarterly,* 21(4), 360-406.

Stanovich, K.E. & Cunningham, A. (1992). Studying the consequences of literacy within a literate society: The cognitive correlates of print exposure. *Memory and Cognition,20,* 148-158.

Stape, S. (2000). *The impact of classroom-based peer tutoring on the automatization of basic addition and subtraction facts for children with attention-deficit/hyperactivity disorder.* Unpublished education specialist thesis, University of South Florida, Tampa.

Storch, S.A. & Whitehurst, G.J. (2001). The role of family and home in the literacy development of children from low-income backgrounds. In P.R. Britto & J. Brooks-Gunn (Eds.) *New directions for child and adolescent development,* 92 (p. 53-71). Indianapolis, IN: Jossey Bass.

Taylor, N.E., Wade, M.R., & Yekovich, F.R. (1985). The effects of text manipulation and multiple reading strategies on the reading performance of good and poor readers. *Reading Research Quarterly, 20(5), 566-574.*

Therrien, W.J. (2004). Fluency and comprehension gains as a result of repeated reading – A meta-analysis. *Remedial and Special Education,* 25(4), 252-261.

Tizard, J, Schofield, W. N., & Hewison, J. (1982). Collaboration between teachers and parents in assisting children's reading. *British Journal of educational Psychology,* 52, 1-15.

Topping, K.J., & Lindsay, G.A. (1992. The structure and development of th Paired Reading approach. *Journal of Reading Research*, 15, 120-136.

Topping, K., & Whiteley, M. (1990). Participant evaluation o fparent tutored and peer tutored projects in reading. *Education Research,* 32, 14-32.

Torgesen, J. K., & Burgess, S. R. (1998). Consistency of reading-related phonological processes throughout early childhood: Evidence from longitudinal-correlational and instructional studies. In J. L. Metsala & L. C. Ehri (Eds.), *Word recognition in beginning literacy* (pp. 161-188). Mahwah: Lawrence Erlbaum Associates.

United States Department of Education (2002). *No Child Left Behind: A Desktop Reference.* Retrieved January 13, 2008, from http://www.ed.gov/admins/lead/account/nclbreference/reference.pdf

United States Department of Education. (2004). *United States Department of Education elementary and secondary education reading first*. Retrieved November 12, 2004, from http://www.ed.gov/programs/readingfirst/faq.html

USDOE (2006). Office of Elementary and Secondary Education; Overview Information; Early Reading First Program; Notice Inviting Applications for New Awards for Fiscal Year (FY) 2006. Retrieved September 4, 2006, from http://www.ed.gov/legislation/FedRegister/announcements/2006-1/011806c.html

Van den Noortgate, W., & Onghena, P. (2003). Combining single-case experimental data using hierarchical linear models. *School Psychology Quarterly,* 18(3), 325-346.

Werner, E. (1993). Risk, resilience, and recovery: Perspectives from the Kauai longitudinal study. *Development and Psychopathology,* 5, 503-515.

Weschler, D. (1989). *Weschler Preschool and Primary Scale of Intelligence-Revised.* San Antonio, TX: The Psychological Corporation.

Witt, J.C. &Elliott, S. N. (1985). Acceptability of classroom management strategies. In T.R. Kratochwill (Ed.), *Advances in school psychology: Vol.4.* (pp. 251-288). Hillsdale. NJ: Erlbaum.

Witt, J.C., & Martens, B.K. (1983). Assessing the acceptability of behavioral interventions used in the classroom. *Psychology in the schools,* 20, 510-517.

Wright, J. (2001). The savvy teacher's guide: Reading interventions that work. www.interventioncentral.org

Wolfendale, S., Topping, K., Hewison, J. (1986). A review of parental involvement in children's reading. *Educational and Child Psychology,* 3(3), 55-63.

Woodcock, R. (1973). *Woodcock Reading Mastery Tests.* Circle Pines, MN: American Guidance Service, Inc.

Woodcock, R. (1987). *Woodcock Reading Mastery Test – Revised.* Circle Pines, MN: American Guidance Service.

Woodcock, R.W., & Johnson, M.B. (1989). *Woodcock-Johnson Psycho-Educational Battery-Revised.* Allen, TX: DLM Teaching Resources.

Young, A.R., Bowers, P.G., & MacKinnon, G.E. (1996). Effects of prosodic modeling and repeated reading on poor readers' fluency and comprehension. *Applied Psycholinguistics,* 17(1), 59-84.

APPENDICES

Appendix A: Demographic Survey

Effect of a Parent Reading Intervention on Elementary-Aged Children's Reading Fluency

Demographic Survey

Thank you for taking the time to participate in this reading intervention and study. The information you provide will be confidential. Please fill in the blank spaces below. If you have any questions, please ask.

Name:_____ _____ _____
First Middle Last

Demographic Information

Your gender: Male or Female **Your child's gender:** Male or female

Parent Age (circle one):

19 years or younger	35-39 years
20-24 years	40-44 years
25-29 years	45-49 years
30-34 years	50 years or older

Occupation: _____ Number of children: _____

Child's Age: _____ Child's Grade: _____ Date of birth: _____

What is your race/ethnicity? (Circle one)
1. Non-Hispanic White
2. Non-Hispanic Black
3. Hispanic
4. Asian or Pacific Islander
5. Native American
6. Other _____

Your educational background? (circle one)
1. Attended some high school
2. Graduated high school
3. Obtained GED
4. Associates Degree
5. Bachelors Degree
6. Master's Degree
7. Graduate Technical School
8. Professional Licensure (MD, etc.)
9. Other _____

1. What language and/or languages do you speak at home? (Please write on line below)
_____

2. How often do you read with your child? (circle one)
   a. less than once a week
   b. once a week
   c. twice a week
   d. three times a week
   e. four times a week
   f. five times a week
   g. more than five times a week

3. How much time do you spend each time you read together? (circle one)
   a. less than 10 minutes
   b. 10-20 minutes
   c. 20-30 minutes
   d. more than 30 minutes

How would you best describe how you read together?
   a. parent reads to child
   b. parent and child read aloud together
   c. child reads to parent without interruption
   d. child reads to parent and parent helps with words child doesn't know
   e. child reads to parent; parent helps with unknown words and corrects errors

How satisfied are you with your ability to help your child become a better reader?
   a. Very satisfied
   b. Satisfied
   c. Neither satisfied or unsatisfied
   d. Unsatisfied
   e. Very unsatisfied

What things make it easier for you to be able to help your child with reading?

_____

_____

What prevents you from being able to help your child with reading?

_____

_____

What would make it easier for you to help your child with his/her reading?

_____

_____

Appendix B: Directions for R-CBM Administration

Standard Directions for R-CBM

1. Place the unnumbered copy of the reading probe in front of the student.

2. Place the numbered copy of the reading probe in front of you but shielded so the student cannot see what you record.

3. Say: "When I say 'Begin,' start reading aloud at the top of this page. Read across the page (DEMONSTRATE BY POINTING). Try to read each word. If you come to a word you don't know, I'll tell it to you. Be sure to do your best reading. Are there any questions?" (Pause)

Say: "Begin" and start your stopwatch when the student says the first word. If the student fails to say the first word of the passage after 3 seconds, tell them the word, mark it as incorrect, then start your stopwatch.

5. Follow along on your copy. Put a slash (/) through words read incorrectly or skipped. Put a slash with a "3" above the word for any words which were provided after a 3-second hesitation. Mark "sc" above words that were self-corrected.

6. At the end of 1 minute, place a bracket ( ]) after the last word and say, "Stop."

7. Score and summarize by writing WRC/Errors.

Appendix C: Parent Social Validity Scale

Please circle the answer which best describes your agreement or disagreement with each statement.

1. This was an acceptable intervention for my child's reading difficulty.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

2. Most parents would find this intervention appropriate for reading difficulties.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

3. I would suggest the use of this intervention to other parents.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

4. My child's reading difficulty was severe enough to warrant use of this intervention.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

5. Most parents would find this intervention suitable for reading difficulties.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

6. I would be willing to continue using this intervention at home.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

7. This intervention would not result in negative side-effects for a child.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

8. This intervention would be appropriate for a variety of children.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

9. This intervention is reasonable for other children with similar reading difficulties.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

10. I liked the procedures used in this intervention.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

11. This intervention was a good way to handle my child's reading difficulty.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

12. Overall, this intervention would be beneficial for other children.

Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

Appendix D: Child Social Validity Scale

I am going to read you some questions about the reading program your mom/dad has been doing with you for the past few weeks. Answer each question as best as you can by pointing to the picture that shows how you feel about it.

1. The reading program my mom/dad used helped me read better.

2. My mom/dad was too strict during the reading program.

3. There are better programs to help with my reading difficulty other than the one my mom/dad used.

4. The reading program used by my mom/dad would be a good one to use with other children.

5. I liked the reading program my mom/dad used with me.

6. I think that the reading program used for my reading difficulty will help me do better in school.

Appendix E: Parent Consent Form

Dear Parent or Legal Guardian:

This letter provides information about a research study that will be conducted at the Village of Excellence by investigators from the University of South Florida. Our goal in conducting the study is to determine the effect of a parent-implemented reading activity on children's reading skills.

- ✓ Who We Are: Renee Corbett, a doctoral student in the College of Education at the University of South Florida (USF), is the Primary Investigator for this study. She is supervised by Dr. Bradley-Klug, a professor in the School Psychology Program at USF. We are planning the study in cooperation with the principal of the Village of Excellence to make sure that the study provides information that will be useful to the school.

- ✓ Why We are Requesting Your Child's Participation: This study is being conducted as part of a project entitled, "Effect of a Parent Reading Intervention on Elementary-Aged Children's Reading Fluency." Your child is being asked to participate because his or her scores on a quarterly reading assessment at the Village of Excellence indicated that he or she is at moderate risk for reading failure and is recommended for additional reading help. Five additional children and their parents will also be asked to participate in this study.

- ✓ Why Your Child Should Participate: We need to learn more about how parents can help their children improve their reading skills! The intervention we will be using has been effective when used by teachers or tutors to help children with their reading. The information that we collect from students may help increase our awareness of how parents can help their children improve their reading skills. Please note that neither you nor your child will be paid for participation in the study. Children who complete study, however, will be able to participate in a pizza party during their school lunch time at the end of the study. It is not certain that participating in this study will improve your child's reading skills.

- ✓ What Participation Requires: If you consent to participate in the study, you will be asked to participate in a 45-60 minute training provided by the Primary Investigator at a location that will be convenient for you (i.e., your home, the Village of Excellence). You will be asked to do the reading activity for 15-30 minutes a day, 4 days a week. You will be asked to record these sessions, using a tape recorder that will be provided to you, so that the investigator can provide any feedback that might help make the activity more effective. The intervention period will last 5 weeks. At the beginning and end of the study, you will also be asked to complete brief demographic and satisfaction survey, requiring about 10 minutes of your time. In addition to doing the reading activity with you, your child will engage in brief reading test 2 times a week for approximately 3 months. These tests require that your child read aloud for the Primary Investigator for less than 5 minutes per session, and will take place at the Village of Excellence during regular school hours. The investigator will record testing sessions to make sure that the investigator accurately scores the tests. In total, parent participation will require approximately 8 hours of your time in the 3-month duration of the study, and approximately 10 hours of your child's time in the same period.

- ✓ Please Note: Your decision to allow your child to participate in this research study must be completely voluntary. You are free to allow your child to participate in this research study or to withdraw him or her at any time. Your decision to participate, not to participate, or to withdraw participation at any point during the study will in no way affect your child's student

status, his or her grades, or your relationship with the Village of Excellence, USF, or any other party.

- ✓ Confidentiality of Your Child's Responses: There are no known risks to your child for participating in this research. Your child's privacy and research records will be kept confidential to the extent of the law. Authorized research personnel, employees of the Department of Health and Human Services, the USF Institutional Review Board and its staff, and other individuals acting on behalf of USF may inspect the records from this research project, but your child's individual responses will not be shared with school system personnel or anyone other than us. Your child's completed assessments and recordings will be assigned a code number to protect the confidentiality of his or her responses. Only we will have access to the locked file cabinet kept by the Primary Investigator that will contain: 1) all records linking code numbers to participants' names, and 2) all information gathered from assessments and surveys. All records from the study (completed surveys, assessments, recordings) will be destroyed in four years.

- ✓ What We'll Do With Your Child's Responses: We plan to use the information from this study to inform educators and psychologists about the effect of the parent reading activity on children's reading skills. The results of this study may be published. However, the data obtained from your child will be combined with data from other people in the publication. The published results will not include your child's name or any other information that would in any way personally identify your child.

- ✓ Questions? If you have any questions about this research study, please contact Renee Corbett (813) 892-1703. If you have questions about your child's rights as a person who is taking part in a research study, you may contact a member of the Division of Research Integrity and Compliance of the USF at (813) 974-9343.

- ✓ Want Your Child to Participate? To permit your child to participate in this study, please complete the attached consent form.

Sincerely,

Renee Corbett, M.A.
Doctoral Student, School Psychology
Department of Psychological and Social Foundations
University of South Florida

Consent for Child to Take Part in this Research Study

I freely give my permission to let my child take part in this study. I understand that this is research. I have received a copy of this letter and consent form for my records.

_____	_____
Printed name of child	Date
_____	_____
Signature of parent of child taking part in the study	Printed name of parent

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an informed consent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study. I further certify that a phone number has been provided in the event of additional questions.

_____	_____	_____
Signature of person obtaining consent	Printed name of person obtaining consent	Date

Appendix F: Student Assent Form

Hello!

Today you will be asked to take part in a research study about parents helping their children become better readers!

- ✓ Who We Are: The person in charge of this study is Renee Corbett, a graduate student at University of South Florida (USF). She is being guided in this study by Dr. Bradley-Klug, a professor at USF. We are working with your principal to make sure this study will be helpful to your school.
- ✓ Why We Are Asking You to Take Part in the Study: You are being asked to be in this study because your reading tests showed that you might be able to use some extra help for reading.
- ✓ Why You Should Take Part in the Study: We need to learn more about what can help children be better readers! By doing this study, we hope to learn if children can earn better reading scores when their parents use a special way of helping them improve their reading.
- ✓ What You Will Be Asked to Do: You will be asked to spend about 15 – 30 minutes reading with your parent, 4 times a week. You will make a chart with them to watch how you are improving your reading. You will also be asked to meet with the researcher, Renee Corbett, two times a week, for less than 10 minutes each visit. When you meet with the researcher, you will be asked to read a short story for one minute. We will use a tape recorder while you are reading at home and at school to make sure we are helping you the best we can and that we are scoring your reading correctly. We will be working together for about 3 months.
- ✓ Please Note: Your involvement in this study is your choice. By signing this form, you are agreeing to take part in this study. Your decision to take part, not to take part, or to stop taking part in the study at any time will *not* affect your grades; you will not be punished in any way. If you choose not to take part, it will not affect your relationship with your school, USF, or anyone else.
- ✓ Privacy of Your Responses: Your information and your scores will be added to the information from other children who are in the study, so they will be kept private. . People approved to do research at USF, people who work for the Department of Health and Human Services, the USF Institutional Review Board, and its staff, and other individuals acting on behalf of USF may look at the records from this research project. However, your scores and information will not be shared with people in the school or anyone other than the researchers. Your work will be given a code to keep them private. Only we will have the ability to open the locked file cabinet stored by the researcher that will contain your work. All records from the study will be destroyed in four years. Again, your scores and information will not be shared with school staff.

- ✓ What We'll Do With Your Responses: We plan to use the information from this study to let others know how parents can help their children to become better readers.

- ✓ Questions? If you have any questions about this research study, you may ask the researcher now or at any point during the study. You can talk with your parents or other adults that you trust about this study. You can talk with the person who is asking you to participate. If you think of questions later, you can ask them.

Thank you for taking the time to take part in this study.

Sincerely,

Renee Corbett, M.A.
Doctoral Student, School Psychology
Department of Psychological and Social Foundations
University of South Florida

Assent to Take Part in this Research Study

I understand what the person running this study is asking me to do. I have thought about this and agree to take part in this study.

_____	_____	_____
Signature of child taking part in the study	Printed name of child	Date

Statement of Person Obtaining Informed Consent

I certify that participants have been provided with an assent form that has been approved by the University of South Florida's Institutional Review Board and that explains the nature, demands, risks, and benefits involved in participating in this study.

_____	_____	_____
Signature of person obtaining consent	Printed name of person obtaining consent	Date

Appendix G: Agenda for Parent Training Session

I. Objectives of the training session

A. To learn how to implement the intervention

B. To watch the intervention modeled

C. To practice and role play the intervention

D. To review the use of equipment (stopwatch and recording equipment)

E. To answer any questions about the intervention and the study

F. To provide demographic information

II. Review of the purpose of the project

A. What we hope to learn from the study

B. Potential benefits of participation

C. Informed consent

D. Informed assent

III. Review of the parent tutoring procedures

A. Discussion of each component of Repeated Readings

1. Quiet area, free from distractions

2. Use of reading probes (child's copy and parent's copy)

3. Parent begins session

a. starts recording

b. reports date of session

c. provides instructions

d. begins timing when child reads first word

4. Child reads for one minute. Repeats reading until s/he has read 3 times or has reached goal of 80 (2nd), 110 (3rd), or 118 (4th), words read correctly per minute
5. Parent scores and provides feedback during reading
    a. misread words
    b. hesitations of 5 seconds
    c. requests for help
    d. requests for definition
6. Calculate words read correctly after each reading
7. Chart progress
8. Provide specific praise
9. Complete treatment integrity checklists

B. Primary investigator models a typical tutoring session

C. Parent role play

D. Primary investigator provides feedback

E. Questions answered

F. Problem-solving

1. Plan when and where the intervention will take place
2. Brainstorm barriers to implementation (e.g., possible time issues, child is not cooperating)
3. Brainstorm possible solutions to these barriers

IV. Overview of intervention schedule, including follow-up calls from Primary Investigator

V. Materials dispersed to parents

A. Binder

B. Instructions

C. Probes – child's copies

D. Probes – parent copies

E. Graph paper for feedback/progress monitoring

F. Tape recorder

G. Tapes

H. Stop watch

VI. Demographic information collected

Appendix H: Session Checklist

Parent's Name: _____ Child's Name: _____

Date: _____ Begin Time: _____ End Time: _____

Reading Trial	Words Read Correctly	Errors
1		
2		
3		

Did your child reach goal of at least 68 words read correctly per minute? (circle one)

Yes No

Did you and your child graph progress? (circle one) Yes No

Did you tape record the session? (circle one) Yes No

How well do you think this session went? _____

_____

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Do you have any questions? If so, please note them here or contact Renee Corbett at

(813) 892-1703._____

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