The University of Southern Mississippi

The Aquila Digital Community

Spring 2010

The Effectivness of Brief Experimental Analysis in Identifying Reading Fluency Interventions When Conducted by Parents

Qi Zhou
University of Southern Mississippi

The University of Southern Mississippi

THE EFFECTIVENESS OF BRIEF EXPERIMENTAL ANALYSIS IN IDENTIFYING

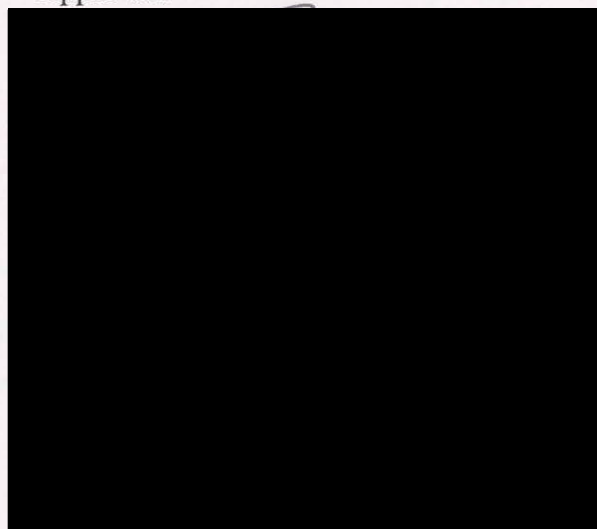# READING FLUENCY INTERVENTIONS WHEN CONDUCTED BY PARENTS

by

Qi Zhou

A Thesis
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Master of Arts

Approved:

Dean of the Graduate School

May 2010

ABSTRACT

THE EFFECTIVENESS OF BRIEF EXPERIMENTAL ANALYSIS IN IDENTIFYING

READING FLUENCY INTERVENTIONS WHEN CONDUCTTED BY PARENTS

by Qi Zhou

May 2010

This study examined 1) if the parents were able to conduct a brief experimental

analysis (BEA) for identifying the most effective reading fluency intervention for their

child; 2) if the brief experimental analysis was effective when conducted by trained

parents. Three elementary students with reading difficulties and their parents participated.

The parents were trained by the experimenter. After reach the mastery of the BEA

procedure, the parents conducted it with their children. The reading interventions that

were evaluated with each child were listening passage preview, repeated reading,

listening passage preview plus repeated reading, listening passage preview plus repeated

reading plus reward. The selected reading interventions through BEA were then

implemented for a longer time. Results and directions for future research were discussed.

ACKNOWLEDGMENTS

you for your enormous support and encouragement in this project and all my other studies. Last but not least, I would like to thank my mother-in-law, Zhongmei Ge, for putting my mind at ease by taking very good care of my baby. And thank you, Tongtong, for being a happy, healthy, and easy baby, mama owes you!

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

CHAPTER I

INTRODUCTION

The No Child Left Behind Act (NCLB; 2001) promotes increased focus on reading and calls for scientifically-based reading programs. Additionally, the goal of NCLB is for US students to reach the goal of reading at or above grade level by the end of the third grade (U.S. Department of Education, 2002).

Reading is a fundamental skill for children's success in school. Stanovich (1986) found that reading ability is a reliable predictor of school success, and students who fall behind early in reading will continue to lag behind throughout their school years (Francizs, Shaywitz, Steubing, Shaywitz, & Fletcher, 1996). Reading problems contribute to the majority of school dropouts (Persampieri, Gortmaker, Daly, Sheridan, & McCurdy, 2006). Poor reading skills are also associated with behavioral and emotional problems (Persampieri et al., 2006). Given the above information, it is troubling to know that only 33% of fourth grade students read proficiently at or above grade level (National Center for Education Statistics; NCES, 2007).

Reading competence includes both oral reading fluency (how fast and accurate a student reads) and reading comprehension (understanding what is read). The National Reading Panel (2000) reported that "Fluency is one of several critical factors necessary for reading comprehension" (p.11). Fuchs, Fuchs, Hosp and Jenkins (2001) suggested that oral reading fluency is an indicator of reading competence. Because of its prerequisite place in reading achievement, more studies have been devoted to addressing the issue of reading fluency than reading comprehension (Daly, Martens, Hamler, Dool, & Eckert, 1999; Eckert, Ardoin, Daly, & Martens, 2002).

Oral reading fluency interventions that have been empirically supported include, listening passage preview, repeated reading, error correction, contingent reinforcement, and performance feedback. Studies (Daly, Martens, Hamler, Dool, & Eckert, 1999; Eckert, Ardoin, Daly, & Eckert, 2002) have shown that students respond idiosyncratically to oral reading fluency interventions. Researchers and experimenters have been employing brief experimental analysis (BEA) to identify the most effective reading interventions for individuals with oral reading fluency deficits. A BEA includes brief tests of interventions to quickly identify the most effective intervention or intervention package for an individual. The effects of BEA have been extensively studied when conducted by experimenters or trained teachers, but few studies have evaluated the use of BEA when conducted by parents following training. The purpose of this study is to evaluate the usefulness of BEA when conducted by parents. Additionally, this study evaluated parent implementation and effectiveness of BEA identified interventions in the home setting.

CHAPTER II

LITERATURE REVIEW

Oral Reading Fluency

Oral reading fluency (ORF) is defined as "the oral translation of text with speed and accuracy" (Fuchs, Fuchs, Hosp, & Jenkins, 2001, p. 239). It has long been recognized as a predictor of overall reading competence. Fuchs et al. analyzed why ORF is an indicator of reading competence from the perspective of attention allocation. According to Fuchs and colleagues, reading, as a complex task, needs the coordination of many hierarchic processes in a short period of time. Those processes compete for the limited attention capacity. Fuchs et al. explained reading with two models: the automaticity model of reading and the interactive model of reading. The automaticity model is a bottom-up serial-stage model of reading. In this model, higher level processes of reading (e.g. comprehension) cannot happen until the completion of lower levels (e.g. reading fluency). If lower level processes require too much attention to complete, there will be none or too little attention left for the performance of higher level processes. Moreover, if lower level processes become automatic, then enough attention will remain for higher level processes.

The interactive model, in contrast, indicates that the activation of a higher level process does not await the achievement of all lower levels. In this model, contextual knowledge helps in word identification in two separate ways: automatic-activation process and conscious-attention mechanism. The automatic-activation process requires little attention capacity when words can be retrieved from memory network automatically. However, the conscious-attention mechanism uses more attention capacity to predict the

upcoming words relying on the contexts. Because poor readers with fluency difficulties use the conscious-attention mechanism more often during reading, little attention capacity is left for integrative comprehension processes.

Despite the differences, both perspectives have one important assumption in common: only when the low-level processes of reading fluency become automatic, can attention be freed to perform higher level processes of the comprehension of text. This assumption supports the theoretical argument that reading fluency should serve as an indicator of both word recognition skill and the reader's comprehension of the text.

In addition to the theoretical hypothesis that oral reading fluency may function as an indicator of overall reading competence, Fuchs et al. (2001) also provided empirical evidence for this hypothesis. They compared oral reading fluency to more direct measures of reading comprehension. Those direct measures included question answering, passage recall, and cloze procedures. Seventy middle school and junior high school students with reading disabilities participated in the study. Each participant completed four measures of reading comprehension.

For question answering, participants read two 400-word passages, 5 min for each, and then answered 10 text related questions. Number of correct responses was averaged across the two passages. For passage recall, the same 400-word passages were used. Participants read one passage for 5 min and had 10 min to retell the passage. Total number of words retold, percentage of content words retold, and percentage of idea units retold were scored as recalls. For the cloze procedure, every seventh word was deleted from each 400-word passage. Participants filled in the blanks where the words were missing for one passage. Exact matches, synonymous matches and syntactic matches

with deleted words were scored as correct replacements. Oral reading fluency was also assessed for all the participants. Students read two 400-word passages out loud for 5 min each, and omissions, repetitions, substitution, and mispronunciations were scored as errors. The average number of words read correctly per minute across the two passages was recorded as the measure of oral reading fluency.

Before administration of the above four reading measures, all the participants were tested by the Reading Comprehension subtest of the Stanford Achievement Test (Gardner, Rudman, Karlsen, & Merwin, 1982), which was used as the criterion measure. Each of the four measures was correlated with the performance on the reading comprehension subtest on the Stanford Achievement Test. Results demonstrated that the correlation between oral reading fluency and the achievement test was significantly higher ($r = 0.91$) than the correlation between each of the three direct reading comprehension measures ($r = 0.82$ for question answering, $r = 0.70$ for recall, and $r = 0.72$ for cloze) and the achievement test. Based on this finding, Fuchs et al. (2001) argued that reading fluency was a better predictor of comprehension than direct measures of reading comprehension such as retelling, questioning and cloze. They also found that oral reading fluency is a better indicator of overall reading competence than silent reading fluency.

Empirically Supported Reading Interventions

Because of the critical role reading fluency plays in reading achievement, reading researchers have investigated a variety of instructional strategies for increasing oral reading fluency in students with reading difficulties. Eckert, Ardoin, Daly, and Martens (2002) suggested that those strategies can be broadly divided into two categories: skill-

based antecedent interventions and performance-based consequent interventions. Skill-based interventions refer to those antecedent procedures that involve modeling, prompting, and student practice. Frequently used skill-based interventions include repeated reading, listening passage preview, and word drill. Performance-based interventions refer to the manipulation of consequences following student reading. Performance-base interventions include error correction, reinforcement contingent on improvements, and performance feedback. The current literature review will discuss two primary skill-based interventions (listening passage preview and repeated reading) and two primary performance-based interventions (performance feedback and rewards contingent on improved performance).

Repeated Reading

Among antecedent interventions for reading fluency, repeated reading has been demonstrated as effective and widely used (Fuchs, et al., 2001). Repeated reading is "a reading program that consists of reading a short and meaningful passage several times until a satisfactory level of fluency is reached" (Samuels, 1979, p. 404). Therrien (2004) suggested that, for a repeated reading intervention, three to four readings of one passage may be sufficient to increase reading fluency and comprehension. Repeated reading is intended to provide the student with more opportunities to practice reading, and repetition is important in terms of skills acquisition and fluency.

Repeated reading has been implemented and has resulted in increased oral reading fluency and accuracy across populations such as students with learning disabilities (Sindelar, Monda, & O'shea, 1990), students with mental retardation (Samuels, 1979), nondisabled students (Daly, Martens, Dool, & Eckert, 1999), elementary students

(Dowhower, 1987), middle school students with reading deficits (Homan, Klesius, & Hite, 1993), and secondary students with reading deficits (Valleley & Shriver, 2003). Repeated reading has also been found to be effective in increasing reading comprehension for slow, but accurate elementary readers (Dowhower, 1987) and for middle school students with reading deficits (Homan et al., 1993). Repeated reading has been recognized by the National Reading Panel as effective for improving students' reading accuracy, fluency, and comprehension (National Institutes of Child and Human Development [NICHD], 2000).

In addition to its effectiveness in increasing reading rate and comprehension, Valleley and Shriver (2003) discussed three more strengths that repeated reading has as an intervention. The first strength is that repeated reading is easy to implement. All the interventionist needs to do is to provide the student with a passage and ask the student to read the passage aloud several times while providing feedback to the student (e.g., interventionist corrects student errors). The second strength is that repeated reading could reinforce student's reading behavior, because it is very likely that rereading a passage will bring about immediate increases in reading speed. Last, repeated reading assists with the development of basic fluency skills the student might be lacking.

Listening Passage Preview

Listening passage preview is another empirically-based intervention that is effective for increasing reading fluency. In listening passage preview, the student first listens to an audiotape of a passage (Daly & Martens, 1994), or to the interventionist reading the passage (Daly, Martens, Hamler, Dool, & Eckert, 1999), while following along silently with their finger. The passage is read at a comfortable rate, Rose and

Beattie (1986) suggested approximately 130 words per minute. The student is supposed to follow the passage with a finger to indicate that they are reading along with the interventionist. The student is then required to read the same passage aloud independently. The purpose of listening passage preview is to model fluent reading and provide the student with an opportunity to practice reading the words they have previewed.

Researchers have found listening passage preview to be an effective intervention to increase oral reading fluency. Daly and Martens (1994) employed a multielement design to compare the effects of three interventions (subject passage preview, listening passage preview, and taped words) on participants' oral reading performance. All four participants had learning disabilities in reading. Two of the participants read at the first grade level, while the remaining two read at the second grade level. In the subject passage preview condition, the participants first orally read a passage independently; the second reading of the same passage was assessed for reading fluency and accuracy. In the listening passage preview condition, the participant listened to an audiotape of a passage while following along silently. The assessment was done in the same manner as in the subject passage preview condition. In the taped words condition, the participant read aloud along with an audiotape of the word list that was taken out of a passage in advance. Then the participant's reading performance on the corresponding passage was assessed. Results demonstrated that, of the three treatments, listening passage preview led to the greatest gains in oral reading accuracy and fluency over baseline for all four participants.

Besides being implemented in isolation, listening passage preview can also be implemented in conjunction with other reading interventions. Daly et al. (1999) conducted a brief experimental analysis to identify instructional components necessary to

increase oral reading fluency for each of four participants. The three reading interventions included in the treatment were, a reward for rapid reading, repeated reading, and listening passage preview. During the experiment, listening passage preview was combined with repeated reading when repeated reading alone did not produce increases in reading fluency. Results suggested that repeated reading combined with listening passage preview was most effective for two of the four participants.

In a brief experimental analysis conducted by Eckert, Ardoin, Daly, and Martens (2002), listening passage preview combined with repeated reading was implemented with five of the six participants as an antecedent intervention. The brief analysis examined the effectiveness of combining the antecedent intervention with consequences on the reading fluency of six elementary participants. The treatment conditions included, listening passage preview with repeated reading, listening passage preview with repeated reading and contingent reinforcement, listening passage preview with repeated reading and performance feedback, and listening passage preview with repeated reading, performance feedback, and contingent reinforcement. Results demonstrated that the effectiveness of the antecedent intervention was enhanced for four of the six participants when combined with one or both consequences.

Reward

Reward is an intervention in which the access to a reward is granted if the student meets criterion set in advance. Preference assessments may increase the probability that rewards function as reinforcers. To do this, the student is asked to identify a list of rewards (depending on how the procedure is designed) in order of preference from a pool of educationally related items (e.g. sticker, pencil). If the student meets the criterion, she

or he can choose a reward from the list (Daly et al., 1999). In the brief experimental analysis conducted by Daly et al.(1999), reward alone did not produce significant gains in students' oral reading performance. However, when combined with an antecedent intervention (i.e., listening passage preview and repeated reading) in Eckert et al. (2002), the oral reading fluency of students with reading difficulties was enhanced.

Performance Feedback

Performance feedback usually includes feedback on: (1) length of time student needed to read the passage; (2) number of words read correctly by student; and (3) number of errors made by student. Performance feedback can also involve goal setting and graphing (Eckert et al., 2002). In goal setting, reading goals are developed by experimenter(s) or both the experimenter(s) and the student prior to the implementation of the intervention. In graphing, the experimenter or the student will record the reading performance on the graph(s). When combined with an antecedent intervention or both an antecedent intervention and contingent reinforcement (Eckert et al., 2002), performance feedback has been found effective in increasing oral reading fluency in students with reading difficulties. Contingent reinforcement and performance feedback may be implemented in isolation or in combination.

In a study by Eckert and colleagues (2002), a brief experimental analysis was used to evaluate the effectiveness of combining two consequences (i.e., contingent reinforcement or performance feedback individually, and then together) with an antecedent intervention (i.e. listening passage preview with repeated reading) on oral reading fluency for six elementary students. After baseline, the treatment conditions included, listening passage preview with repeated reading and contingent reinforcement,

listening passage preview with repeated reading and performance feedback, listening passage preview with repeated reading and performance feedback plus contingent reinforcement. A multi-element design was used to alternate the treatment conditions. The treatment conditions were presented randomly for four of the participants, and sequentially for the other two. Results of the study demonstrated that the combination of the listening passage preview with repeated reading and either of the two consequences produced greater improvement in oral reading fluency than sole use of the skill-based antecedent intervention. However, no further improvement was identified when both the consequences were combined with the antecedent intervention.

Chafouleas et al. (2004) examined the additive effects of performance-based interventions to skill-based interventions on reading and error rates of three elementary students experiencing reading difficulties. The two performance-based interventions investigated were performance feedback and contingent reward, the skill-based intervention was repeated reading. The three treatment conditions created out of the above interventions were: repeated reading (RR) alone, repeated reading with performance feedback (RR/FB), and repeated reading with both performance feedback and contingent reward (RR/FB/RW). An alternating treatments design was used and passages were randomly assigned to conditions. In order to control sequence effects, the order of conditions was also randomly assigned for participants. Results suggested that, for students with relatively high reading accuracy and low fluency levels, repeated reading or practice alone might be the most effective intervention. However, for students exhibiting relatively low accuracy and low fluency rates, performance feedback and/or contingent reinforcement in conjunction with practice (i.e., repeated reading) might be

the most helpful way to improve reading performance. For all participants, oral reading

fluency increased 1.3 to 2.4 times more words read correctly per min on average relative

to baseline during the antecedent intervention condition; and consistently higher reading

rates were observed when the antecedent intervention was combined with one or both

consequences. All intervention packages resulted in limited generalization (e.g.,

performance on untrained passages).

Curriculum Based Measurement

Oral reading fluency may be measured using curriculum-based measurement

(CBM) procedures. CBM includes standardized measures for reading, mathematics,

writing, and spelling and was developed by Deno and colleagues in the early 1970s

(Shinn, 1989). It was first produced to provide special education teachers with

standardized, simple, and accurate approaches to measure students' skills in basic

academic areas (e.g., reading, spelling, mathematics computation, written expression),

Today, CBM is widely used in both general and special education settings. Several

features of CBM set it apart from other forms of curriculum based assessments (Hintze,

Christ, & Methe, 2006). First, unlike other mastery or criterion-referenced measurements

that usually focus on short-term mastery objectives, CBM focuses on broad, long-term

objectives and is used as a general outcome measure. Second, because administration of

CBM is time-efficient, and the measures are sensitive to small changes in student growth,

CBM may be implemented repeatedly over time. Third, because of this long-term focus,

CBM can be used to assess maintenance and generalization effects of a treatment. Fourth,

CBM specifies the evaluation procedures involved from test stimuli generating, test

administering and scoring, to data analysis and inference making. The whole

standardized process makes it possible to compare scores inter and intra-students over time (Hintze, et al., 2006).

For oral reading fluency, CBM includes the following three steps: (1) structuring reading probes; (2) administering and scoring the reading probes and; (3) analyzing data and decision making. Shapiro (2004) provided specific guidelines for these three steps. To structure reading probes, three passages may be selected from the beginning, the middle, and the end of a book of certain grade level in a reading series. Reading probes selected in this way represent a reasonable range of material covered in that grade level. The passages are usually 50- to 100-words in length for first through third grades, and 150- to 200-words in length for fourth grade and above. Readability of each passage should be calculated according to certain formula (e.g., Spache) to control for difficulty level. Each of these selected passages will be typed on two separate sheets, one for the student to read and the other for the evaluator to score on. On the evaluator's copy, word counts will be placed on the right hand margin to facilitate the scoring process. The administration of reading probes should start with the grade level in which the student is currently placed.

The three probes should be administered in the same order they are placed in the book; that is to say, starting with the probe selected at the beginning of the book, followed by the middle one, and then the one at the end. The student should be informed prior to the administration that she or he is going to read and that she or he should do their best reading. Then the student is provided with the student's copy of the reading probe, as soon as the student reads the first word, the evaluator starts the stopwatch. While the student is reading, the evaluator records student errors. Errors include omitted

words, mispronounced words, substitutions, insertions, and words the student pauses for 3s. At the end of one minute, the evaluator places a bracket around the final word read by the student. The total numbers of word read correctly and incorrectly in one minute is then calculated and recorded.

After all three probes are scored, the median correct and incorrect words read per minute will be used to compare with criteria for placement. The evaluator then decides if the student is reading at mastery, instructional, or frustrational level of a certain grade level, and moves up or down the grade level accordingly to administer the next set of three reading probes. The procedure continues until the grade level at which the student is reading at the instructional level is determined.

In addition to being used for instructional level establishment, CBM can also be used to monitor the progress of student's reading fluency over time (Hintze et al., 2006, and Shapiro, 2004). For progress monitoring, reading probes are selected from long-term, goal-level reading material that the student is expected to be able to read fluently at the end of a certain academic year. Progress monitoring is usually conducted one or two times per week. For each session, the student reads only one passage for one minute. The administration and scoring of the reading probes are conducted in the same manner as in the establishment of instructional level. In reading fluency interventions, the progress monitoring data are compared to baseline data to determine how much the student has progressed in oral reading fluency.

A series of studies (for review, see Marston, 1989) has provided substantial evidence for the validity and reliability of CBM. In these studies, correlation coefficients between CBM oral reading and different generally accepted, published norm-referenced

reading tests ranged from .63 to .90, with most coefficients being above .80. The predictive validity of curriculum-based reading measures on global reading proficiency ranged from .57 to .86, with half the coefficients above .80. The CBM 1-min reading measure also appeared to be a valid predictor of students' success in curriculum with a reported correlation coefficient of .84. Test-retest reliability for CBM reading measures have ranged from .82 to .96, parallel form reliability ranged from .84 to .96, interrater agreement coefficients were reported at .99.

Fewster and Macmillan (2002) added to the evidence of psychometric quality by longitudinally examining the validity of CBM for predicting students' school performance. At the beginning of the study, the CBM reading fluency and written expression data were collected for 465 students in Grades 6 and 7. The students were then divided into two groups. For the Grade 6 group, CBM scores were compared to their English and social studies (considered to be the most reading and writing intensive) grades for Grades 8 and 9; and for the Grade 7 students, the CBM scores were compared to their grades in the same two courses for Grades 8 through 10. The Grades 8 through 10 school course (English and social studies, in this case) grades were regarded as criterion measures.

Separate correlational analyses were run for the two sets (Grades 6 and 7) of CBM scores. A significant positive correlation was indicated between Grades 6 and 7 reading and written expression CBM scores and Grade 8 through 10 school course grades. The coefficients between reading fluency and school course grades ranged from $r = 0.35$ to $r = 0.53$; the coefficients between written expression and course grades ranged from $r = 0.24$ to $r = 0.50$. Generally, oral reading fluency correlated

more highly with course grades than written expression. Both oral reading fluency and written expression correlated more highly with English than with social studies, and those coefficients were statistically significant ($p < .005$). This study provided empirical evidence that CBM measures are valid in assessing students' overall academic performance.

Brief Experimental Analysis

Reschly and Ysseldyke (2002) pointed out that making special educational placements and categorical diagnoses (e.g. learning disabilities, emotional disturbance), which school psychologists spend approximately two-thirds of their time doing, does not lead to effective intervention strategies. With awareness of this, the field of school psychology is now shifting from focusing on identifying the handicapping condition to identifying effective interventions for students with academic problems.

Wilber et al. (2006) stated a variety of hypotheses that might explain students' academic difficulties. The five common hypotheses are that the student (1) lacks motivation, (2) has not experienced enough practice, (3) does not receive sufficient assistance, (4) has not had to use the skill in a manner that met specific requirements, and (5) there is a weak match between student's skill level and the difficulty of the instructional materials. The various reasons students experience academic difficulties may also explain an individual's idiosyncratic responses to various interventions (Daly et al., 1999; Eckert et al., 2002).

Another factor that needs to be taken into consideration when it comes to selecting effective interventions for academic problems is the instructional hierarchy. The instructional hierarchy was first described by Haring, Lovitt, Eaton, and Hansen (1978).

It should correspond with a hierarchy of learning stages (acquisition, fluency, generalization, and adaptation) that a student goes through when learning a new skill. When a student begins to learn a skill, he or she enters the acquisition stage, where accurate performance is the goal of instruction and instructional strategies include modeling, prompting, student practice, and immediate feedback (e.g., praise for accurate responding, corrective feedback for inaccurate responding). After the student has acquired the skill, he or she enters the fluency stage where the learning process shifts from accuracy to fluency. Corresponding instructional strategies include drill and practice and shaping. The next stage is generalization in which the student is expected to perform the skill in novel ways or under different stimulus conditions. Instructional strategies for the generalization stage include teaching multiple exemplars, training under a variety of stimulus conditions, and sequential modification. The last stage in the learning hierarchy is adaptation. In this stage, the student learns to modify the learned skill to solve new problems. In order to facilitate the adaptation of the skill, instruction focuses on providing novel situations for the student to practice modification of a learned skill in the solution of new problems.

The instructional hierarchy may provide a useful heuristic for intervention selection. Because oral reading fluency is defined as the "oral translation of text with accuracy and fluency" (Fuchs, Fuchs, Hosp, & Jenkins, 2001, p. 239), it actually includes both the acquisition and fluency stages. For students with both low accuracy and low fluency levels, the intervention should focus on modeling and error correction to improve the accuracy and get the student through the acquisition stage first. For students who read slow but make very few errors, the intervention strategy should focus more on

fluency and provide more opportunities for repeated drill and reinforcement for fluency shaping.

As mentioned previously, student response to intervention may be idiosyncratic and educators are faced with the challenge of selecting interventions for an individual student who may respond variably to a range of evidence-based procedures. Fortunately, brief experimental analysis (BEA) has been demonstrated to be an effective procedure for identifying the most effective and efficient reading intervention(s) among a range of procedures for individual students (e.g., Daly et al., 1999; Daly et al., 2002; Dufrene & Warzak, 2006; Eckert et al., 2000; Eckert et al., 2002; Welsch, 2007).

BEA is a procedure in which "a variety of empirically based interventions are systematically tried to determine how the student responds to various interventions" (Wilber et al., 2006, p.80). A complete BEA procedure may include two phases: brief analysis and extended analysis. During the brief analysis, the potential intervention and/or intervention package is selected and examined, the treatment that produces the greatest gains in the student's reading is identified. Then, the identified treatment is implemented in the extended analysis for a longer term to verify the conclusion of the brief analysis. To do this, Wilber et al. (2006) stated that there are four steps in a BEA procedure.

The first step is to obtain a baseline level of performance in the targeted area. The second step is to select potential interventions based on the hypotheses of academic deficits in relation to the instructional hierarchy discussed above, and then arrange these interventions systematically (e.g. the least to most adult effort needed) for implementation. The third step in BEA is to briefly implement the intervention or

intervention package and measure the student's response to each of the conditions. Each condition is usually implemented one to three times. The final step in BEA is to compare the effectiveness of experimental conditions to baseline and each other. The intervention or intervention package that produces the greatest improvements in student's responding will be selected for implementation in the extended analysis and over time if verified.

BEA Research

Daly et al. (1999) conducted a BEA to evaluate the effects of reading interventions grouped hierarchically in order to make individualized treatment recommendations. Four elementary students who had been referred for reading problems participated in the study. Instructional passages and high content overlap (HCO) passages were used to implement intervention(s) and to assess students' generalized reading performance. The effects of treatment conditions on participants' reading were measured by the number of correctly read words per minute (WCPM) (i.e. CBM) on the instructional passage. Baseline data were obtained and then the treatment conditions were arranged in the following sequence: reward (RE), repeated readings (RR), repeated readings with sequential modification (RR/SM) (sequential modification is a procedure in which a treatment is applied to both instructional and HCO passages), listening passage preview plus (LPP/RR) repeated readings, listening passage preview plus repeated readings plus sequential modification (LPP/RR/SM), listening passage preview plus repeated readings plus easier materials (LPP/RR/EM). The premise behind the arrangement was that if the previous treatment condition did not improve participants' responding noticeably, further components were added to the subsequent conditions to augment the treatment. Sequential modification refers to the application of reading

interventions to the HCO passages. It occurred when there was a noticeable improvement in responding in the instructional passage under certain condition but not in the HCO passage, then, that condition was applied to the HCO passage (e.g. RR/SM).

A brief multi-element design was employed to compare the effects of treatment conditions to one another and to baseline. In each condition, the treatment was implemented with the instructional passage, students' performance on the final reading of the instructional passage was assessed as the effects of the treatment, and then generalization effects were evaluated by assessing students' performance on the HCO passage. When a treatment condition produced visible improvements in performance relative to baseline and/or other treatment conditions, a brief reversal was administered to confirm the effects. The reversal was achieved by inserting a baseline condition after the last effective condition.

Results demonstrated that individuals responded differently to treatment conditions. The RR/SM was most effective for two of the participants, while the other two students successfully responded to LPP/RR/SM and LPP/RR/EM, respectively. In other words, repeated readings appeared to be the most effective intervention for 2 of the participants, listening passage preview plus repeated reading was the most effective intervention for another one, and listening passage preview plus repeated readings plus easier materials worked best for the last participant. These results suggested that (1) individuals respond to interventions idiosyncratically, and (2) brief experimental analysis is helpful in identifying the most effective intervention or intervention package for individual students. Another result of the Daly et al. (1999) study was that generalization

to novel passages was not guaranteed when a treatment produced gains in oral reading fluency for instructional passages.

Eckert et al. (2002) conducted a BEA to investigate the separate and combined effects of antecedents and consequences on students' oral reading fluency. Six elementary students with some degree of reading difficulties participated in the study. WCPM was calculated and served as the indicator of reading performance. The first minute of the reading of a novel passage in baseline sessions and the first minute of the last reading in each treatment condition were measured. The experimental conditions included: antecedent intervention (AI) (including listening passage preview and repeated reading), antecedent intervention and contingent reinforcement (AI + CR), antecedent intervention and performance feedback (AI+PF), and antecedent intervention, performance feedback, and contingent reinforcement (AI + PF + CR).

During the antecedent intervention condition, the participants first listened to the experimenter read the passage aloud one time and then practiced reading the same passages aloud for three consecutive times. For one of the six participants, the antecedent intervention included only repeated reading due to previous evidence that combining the two antecedent-based interventions did not produce desirable gains in his performance. For performance feedback, reading goals were developed through the collaboration of the experimenter and an individual participant prior to the implementation of the antecedent intervention. Following each reading, the experimenter informed the participant of the two measures of his or her reading performance: number of errors made and number of minutes used in reading. The student then recorded the data on two corresponding graphs. For contingent reward, the participant was rewarded with a selected reinforcer if his or

her last reading rate exceeded the initial passage reading rate by 5%, the reinforcer was selected by the participant prior to the last reading.

A multi-element design was utilized.. For four of the six participants, the conditions were randomly ordered, and each condition took place equally often in each order. Results suggested that the antecedent intervention condition increased all participants' reading fluency and the effectiveness was enhanced for four of six participants when either of the two consequences was added. However, when the two consequences were combined, no further performance improvements were observed in any of the four participants. The idiosyncratic responses were again demonstrated when the consequence that brought about the greatest gains varied across participants.

Dufrene and Warzak (2006) conducted brief experimental analyses to identify effective reading fluency interventions for English and Spanish reading. An Hispanic student in the 3rd grade participated in the investigation. He was reported to be experiencing difficulties in English and Spanish reading. The dependent measures were WCPM and errors per minute (EPM). A brief multi-element design with a mini-withdrawal was used to analyze the effects of oral reading fluency interventions. Treatment conditions were ordered in the following sequence: listening passage preview (LPP), repeated reading (RR), reward (Re), and listening passage preview with repeated reading (LPP/RR). Analysis and intervention implementation was first administered to English reading followed by Spanish reading. After the initial analyses, the most effective treatments were implemented respectively for English and Spanish reading. The initial analyses identified that LPP/RR was the most successful treatment in increasing participant's English oral reading fluency, whereas LPP produced the greatest gains in his

Spanish oral reading fluency. The conclusions of the initial analyses of both English and Spanish reading were confirmed by the implementation of the identified treatment conditions in isolation over a longer term. During the replication of the initial analyses, LPP/RR was once again identified as the most effective intervention for English reading; while RR, instead of LPP, led to the greatest performance gain in Spanish reading. The authors explained that the discrepancy between the initial and the second analyses may have occurred because the participant had moved from the acquisition learning stage to the fluency stage in Spanish reading. The results of this investigation supported that brief experimental analysis can also be used to identify effective reading fluency interventions in Spanish reading.

All the above studies were conducted with students in general education. Welsch (2007) assessed the efficacy of BEA for identifying an effective reading intervention program for students with disabilities. All four participants had been diagnosed with learning disabilities and were receiving special education services. The independent measures were WCPM, EPM, and recalls across instructional and generalization passages. The treatment conditions included repeated readings (RR), listening passage preview (LPP), repeated reading with easier materials (RR/EM), and listening passage preview with easier materials (LPP/EM). During RR condition, the participants read the instructional passages aloud four times. The experimenter informed the students the number of words read correctly and incorrectly per minute after each reading. During LPP condition, the student first listened to the experimenter read the instructional passage one time and the student read the same passage out independently one time. During the conditions with easier materials (i.e., RR/EM, LPP/EM) the treatments were administered

in the same manner as described above except that the treatment was applied to passages that were one grade level below the students' current instructional level were used. Students' performance during the first minute of the final reading of the instructional passages and the first minute of the generalization passages were used as data collection purpose.

The experimental procedure consisted of three phases. In Phase 1, a baseline and a brief analysis were conducted. Two baseline conditions – baseline at grade level and baseline at easier materials – were conducted. The four treatment conditions were administered once for each student as a brief analysis. The conditions were counterbalanced across students to reduce sequence effects. In Phase 2, an extended analysis was conducted. Based on the results of the brief analysis, a multi-element design was used in Phase 2 to compare a best treatment to a less effective condition four to six times for each individual student to confirm or disconfirm the results of Phase 1. Phase 3 was implemented to examine the treatment effects across time. The identified treatment condition in Phase 2 was implemented for 15 to 20 sessions.

The results of the investigation demonstrated that the interventions selected through experimental analyses led to improvements in oral reading fluency in students with disabilities. Specifically, students increased WCPM and decreased level of errors for instructional passages, and increased recalls for both instructional and generalization passages. However, the extended analysis confirmed the results of the brief analysis for only two of the participants. The author, therefore, suggested the brief analyses used in combination with extended analyses for decision making concerning instructional methods.

Malloy, Gilbertson, and Maxfield (2007) demonstrated that BEA can be used to select effective reading interventions to increase the reading fluency of English language learners (ELLs) with reading difficulties. Five Latino elementary students participated in the study. They were all in general education and referred by their teachers for poor reading performance. The dependent variables were oral reading fluency and maze fluency. Oral reading fluency was measured by the number of correct words read per minute. Maze fluency was determined by the number of correct word choices per minute. The maze passages were constructed by replacing every seventh word of the instructional passages with three word choices.

The experimental conditions included baseline, contingent reward (CR), LPP, RR with error correction, key word (KW) with error correction, and incremental rehearsal (IR) with error correction. During the CR condition, the students could earn a reward of their choice if they could beat their scores in the baseline condition. For LPP, students listened to the experimenter read an instructional passage first, and then students practiced reading the passage as the experimenter corrected errors. During the RR with error correction condition, error corrections were provided during students' first three readings, students were also provided with feedback regarding the speed of their reading and errors. For KW with error correction, students first circled five unknown words in an instructional passage, next, students read the passage and the examiner corrected errors along. Following reading practice, students repeated the five unknown words after the experimenter modeled reading them. Then the experimenter defined each word in a sentence. In the IR with error correction condition, students practiced one unknown word at one time until all the five unknown words were presented. The conditions were

administered in the order as described above based on a least to most intensive instructional and language support premise. The instructional, maze, and generalization passages were administered at the end of each condition and students' performance was scored for data collection purpose. A mini-withdrawal design was utilized to replicate the effects of the most effective treatment identified through the BEA. An extended analysis was employed to compare the effects of the most effective intervention to a baseline condition using an alternating design.

The results once again demonstrated that students responded to reading interventions idiosyncratically (i.e. RR was selected for two of the participants, KW was effective for one, and two other interventions were effective for the rest of two participants). The study also supported the utility of BEA for identifying effective reading interventions for ELL students, and the extended analysis confirmed the outcomes of the BEA for four of five participants.

Finally, Daly, Bonfiglio, Mattson, Persampieri, and Foreman-Yates (2006) used a BEA to examine the effect of a reading fluency treatment package on easy and difficult passages. Three elementary students referred by their teachers for reading problems participated in the study. During the pre-experimental screening, students read 13 passages aloud for one minute, and then the passages were ranked from easiest to hardest in terms of WCPM and errors per minute for each student. The two easiest and the two most difficult passages were selected to be used in the four conditions of the BEA: control and treatment in easier passages and control and treatment in difficult passages. The control and treatment conditions were tested in a random order. During the control condition, the student simply read a passage aloud for one minute. The treatment package

included: reward, LPP, RR, phrase drill error correction, and syllable segmentation and blending lesson. Phrase drill error correction involved having the student reread phrases containing error words three times after the experimenter modeled correct reading of incorrect words. Syllable segmentation involved breaking the incorrectly read words into individual syllables, the student repeated each syllable in order and then together as a word after the experimenter. Syllable segmentation was applied after an incorrectly read word had been corrected in the phrase drill error correction and when the student read the word incorrectly again in the next reading.

The results of the BEA showed increased performance in all three participants in treatment passages for both difficulty levels, indicating that treatment was effective at enhancing reading fluency. Although the increase was differential, greater magnitude was observed in the harder passages than in the easier passages for all three participants.

Parental Involvement in Interventions

Most studies including BEA of reading fluency interventions have been conducted by experimenters or trained teachers in school settings; very few studies have explored the effects of BEA identified reading interventions conducted by parents in clinic and home settings. Persampieri, et al. (2006) indicated that parents are major supporters in their children's education and play an important role in the academic success of their children. Parent-directed interventions extend the learning environment and opportunities for the children. Involving a parent in a reading intervention conducted outside of the school day can increase the number of opportunities a child has to read. Another benefit of parent tutoring is they can provide one-to-one attention and offer immediate modifications when necessary.

One problem is parents often do not know how to help their children academically and are often poorly-equipped in doing so. Weinberger (1996) found that only 12 of 42 parents in her study knew how reading was taught in school. McMackin (1993) found many parents felt inhibited about participating in their child's literacy development. However, with sufficient support, studies have showed that parents are able to implement academic interventions accurately and effectively (e.g., Persampieri et al., 2006; Valleley et al., 2002). In fact, parents have successfully used a range of reading interventions such as modeling, performance feedback, error correction, and repeated readings. Additionally, studies have demonstrated that parent-tutoring with these reading interventions has resulted in improved reading fluency and comprehension. (Persampieri et al., 2006; Valleley et al., 2002).

Valleley, Evans, and Allen (2002) trained a parent to implement a sight word flash card drill, an overcorrection procedure, and to utilize rewards for reading. Results show that the parent correctly implemented the intervention as prescribed (integrity was checked by having the parent record the extent to which they completed intervention activities), the child's sight word knowledge increased throughout the intervention (from 35 to 82), and the child's reading fluency showed marked improvement (from 8.3 correctly read word per min at baseline to 29 WCPM at the end of the intervention) over the 15 weeks procedure.

In their study, Persampieri, et al. (2006) conducted two experiments evaluating the effects of parent delivered reading interventions on the reading fluency of participants with learning disabilities. Both experiments used single-case designs. Experiment 1 used a multiple-probe design across passages to establish experimental control when changes

in level, trend, and/or variability occurred only under the condition (reading passage) receiving treatment (parent tutoring). The reading intervention included repeated readings, error correction with sentence repeat, and contingent reward for improvements in performance. Results showed that both participants in Experiment 1experienced dramatic changes in levels for both WCPM and errors in the instructional passages: the level of reading fluency increased from a mean of 45.4 WCPM to a mean of 76.3 WCPM for one participant, and a mean of 53.8 WCPM to a mean of 115.6 WCPM for the other participant, and the errors made per min dropped from a mean of 11.0 to a mean of 2.9, and a mean of 7.5 to a mean of 2.0, respectively.

Experiment 2 used a brief experimental analysis that included both experimenter and parent delivered instructional trials to validate the treatment package. Moreover, the effects of parent implementation were observed directly by the experimenter before the parent used the intervention at home. Assessment results showed that the treatment package was effective in increasing reading performances for all three participants. Additionally, two of the participants' parents obtained performance increases that matched those of the experimenter. The third parent obtained less magnitude in performance increases but still in the desirable direction. Then, an alternating treatment design was used to evaluate the effectiveness of the treatment package relative to a non-instructional (control) condition. Results confirmed the outcomes of the brief analysis. A positive correlation between treatment integrity (i.e., treatment implementation) and student outcomes was also found in the alternating treatments design. In addition to this, without adequate treatment integrity, no definitive decision can be made about treatment effectiveness.

Specific training procedures that are associated with satisfactory treatment integrity have been indentified. Sterling-Turner, Watson, Wildmon, Watkins, and Little, (2001) conducted a study to investigate the relationship between training procedures and treatment integrity. During their study, undergraduate student participants were trained using one of three procedures (didactic, modeling, or rehearsal/feedback) to implement the treatment and then conducted a treatment session with the client. Treatment sessions were coded for accuracy of implementation. Results showed that higher levels of treatment integrity were associated with direct training procedures (i.e., modeling and rehearsal/feedback training). While the study by Sterling-Turner and colleagues did not include parents implementing reading interventions, it still has implications for training individuals to implement a variety of treatment procedures.

Two strategies that have been used to increase the probability that parents implement interventions with integrity are parent training and procedural monitoring. Direct training methods like modeling and feedback (have been found effective in training parents to learn how to use the interventions). Procedural checklists, audiotaping, videotaping, and phone calls have been used in procedural monitoring to help parents correctly implement interventions. With adequate training and monitoring, parents have been found to be more confident in helping their children and better able to implement the interventions correctly. Sufficient training, support, and feedback on both the child and the parent's performance can also prompt greater parent adherence to interventions (Persampieri, et al., 2006, and Valley, et al., 2002).

Summary

BEA has been supported by studies as successful in identifying an effective oral reading fluency intervention for individuals exhibiting reading fluency problems. As mentioned previously, parent implementation of reading interventions may result in improved reading performance and includes additional benefits when compared to intervention implemented at school (e.g., parents are in a better position than teachers to provide one-to-one attention, and parent-directed intervention extends children's learning opportunities outside of the school). However, there is not a substantial literature base examining the use of BEA-identified interventions implemented in the home setting by parents. The purpose of the current study is to investigate the effects of BEA-identified intervention for reading fluency implemented at home by parents. Another purpose is to determine if parents are able to implement BEA with integrity following training and support (e.g., provision of materials).

Research Questions

1. Will parents be able to implement BEA for reading fluency with integrity following training?

2. Will BEA identified oral reading fluency interventions for students with oral reading difficulties be effective when implemented by parents at home?

CHAPTER III

METHOD

Participants and Settings

Two first grade students and one third grade student and their parents participated in the study. Student participants were selected based on the following criteria: (1) student's reading fluency was below average as evidenced by WCPM 50% below expectations according to AIMsweb growth table, 2008-2009 school year spring measurement (fewer than 59 WCPM for first grade, and fewer than 118 WCPM for third grade), (2) student committed fewer than four errors per minute, and (3) student's parent consented (Appendix A) to their participation in the study. In addition, a university-based Institutional Review Board approved the investigation prior to its onset (Appendix B). Participants were recruited from local elementary schools located in a southeastern state. Parents were trained individually by the experimenter to conduct a BEA. Parent training and baseline sessions were conducted in the University of Southern Mississippi School Psychology Service Center. Extended intervention analyses (i.e., intervention implementation) occurred in the students' homes.

C. J. was a 6-year-old African American female first grade student, R.E. was a 7-year-old Caucasian female first grade student, and C.C. was an 8-year-old African American male third grade student. All three students attended general education classrooms in two elementary schools located in a southeastern state.

Materials

The primary experimenter provided parents with a digital timer, an audiocassette recorder and cassette tapes, copies of the instructional passages (described below) and

generalization passages (described below), and an intervention implementation protocol (Appendix C).

Brief experimental analysis. Instructional and generalization passages for the brief experiment analyses were taken from the Silver, Burdett, and Ginn basal reading series (Pearson et al., 1989). Passages are approximately 100 words in length, do not contain any pictures, and are controlled for grade-level. For each passage, there is an examiner copy with a corresponding student copy. The generalization passages are passages that contain a large percentage (80% - 90%) of the same words as the corresponding instructional passages. The instructional passages were used to implement reading interventions in each BEA condition; the generalization passages were used to evaluate immediate generalized effects of each intervention.

Intervention passages. DIBELS (The Dynamic Indicators of Basic Early Literacy Skills) (DIBELS; Good & Kaminski, 2002) oral reading fluency progress monitoring passages were used for intervention. Reliability and validity of DIBELS oral reading fluency passages has been reported to be high, with test-retest reliabilities ranging from .92 to .97 and alternate form reliabilities ranging from .89 to .94. Criterion-referenced validity was reported to range from .52 to .91 (Good & Kaminski, 2002).

Assessment passages. AIMSweb reading probes (http://www.aimsweb.com) were used to collect progress monitoring data. These probes can be used to measure oral reading fluency for grades K-8 and have been found to be both reliable and valid in measuring gains in oral reading fluency. They were designed so that students would be assessed equally, regardless of differences across curricula or changes in curricula over time. Test-retest reliability for AIMSweb probes was reported to be .92, alternate form

reliability was reported to be .89, and inter-judge agreement was a reported .99, using students from grades 1-6 as the participant pool. The criterion-referenced validity of the AIMSweb probes was reported to be .91 for Ginn and Scott-Foresman basal readers as the criterion measure, using a participant pool of 1st-6th graders (Shinn & Shinn, 2002).

Experimental Procedure

Dependent variables. WCPM were measured to examine the intervention effects on reading fluency. A correctly read word was defined as a word that is pronounced correctly in less than 3s, given the correct reading context, or a self-correction within 3s (Shinn, 1989). Errors were defined as the following four types: (1) mispronunciations, words that were misread; (2) substitutions, words that were substituted for the stimulus words; (3) omission, words that were skipped or not read; and (4) pause, if a student hesitated for more than 3s, the word was provided, and it was counted as an error (Shinn, 1989).

Instructional Placement and Baseline. Participants' instructional level in reading was determined using procedures described by Shapiro (2004). Prior to the intervention, the student participants were asked to read Curriculum Based Measurement (CBM) reading probes and the experimenter scored WCPM and EPM (see Appendix I for instructions). The participants read passages starting at their grade levels. Three passages were read at each grade level, WCPM and EPM were recorded for each passage, and only the median scores were used as reading fluency score. If they could not meet the fluency standards of their corresponding grade levels (40-60 WCPM for first grade and 70-100 WCPM for third grade), they were moved down one grade level until the appropriate instructional levels were determined. Both C. J. and R.E. were reading at first grade

instructional level with C. J. reading 52 WCPM and R.E. reading 41 WCPM. C.C. read 84 WCPM for first grade reading probes and 75 WCPM for second grade readings. These two scores placed him at mastery level for both first and second grade readings. He read 56 WCPM for third grade reading probes which placed him at frustrational level. Third grade reading probes were used for his intervention because the other two levels revealed mastery level performance, and performance for third grade probes was near the instructional level.

Parent Training. A structured protocol (Appendix C) was provided to participating parents. The experimenter trained parents individually to implement each reading intervention. The training included three parts: (a) the experimenter described the steps for each reading intervention, (b) the experimenter modeled the intervention for the parent with the child, and (c) the experimenter observed the parent practice the intervention procedure and provided feedback. One hundred percent accuracy for all the steps included in the treatment integrity checklist (see Appendix D) was used as criterion for parents' mastery. Training lasted approximately one and one half hours per parent, and all three parent participants reached one hundred percent accuracy for all intervention procedures and CBM procedures. However, it is important to point out that the primary experimenter provided some prompts and reminders for all three mothers with regard to intervention steps and BEA procedures when parents were implementing BEA with their child.

Independent Variables. Reading interventions included repeated readings (RR), listening passage preview (LPP), listening passage preview with repeated readings (LPP/RR), reward (Re), and listening passage preview with repeated readings and

rewards (LPP/RR/Re). The order of the conditions was randomized within and across participants.

Listening Passage Preview (Appendix E). During this condition, the parent first read the instructional passage to the child (modeling fluent reading) while the child read along silently (provide a practice opportunity). The child was instructed to follow along using their index finger as their parent read the passage. After listening to the parent reading the passage, the child read the passage aloud independently. At the end of one minute, the parent placed a bracket after the last word read. The child continued to finish reading the entire passage. The parent recorded WCPM and EPM for the first minute of the reading as an index of reading fluency. The generalization passage was administered immediately after the child read the instructional passage.

Repeated Readings (Appendix F). RR provides students with more reading practice by having them repeatedly read the same passage aloud four times. Each time after the first three readings, students were informed how quickly she or he read the passage. Parents read along silently and recorded WCPM for the first minute of the final reading. The generalization passage was administered immediately after the last reading of the instructional passage.

Listening passage preview/repeated readings (Appendix G). LPP/RR includes implementation of LPP then RR. In this condition, the parent first read the passage to the child one time, and the child practiced reading the passages aloud three times. WCPM was recorded in the same manner as above following the fourth reading trial. The generalization passage was administered immediately following the last reading of the instructional passage.

Reward (Appendix H). During this condition, students were informed that they could earn a reward if they could exceed their score in WCPM from the previous session. A goody box containing educationally related items (e. g., pencils, and stickers) was presented to students and the students were allowed to explore the box. Then the box was taken out of students' reach, but left within students' sight. After students finished reading the entire instructional passage, the experimenter told students their scores for WCPM in the first minute, and if they exceeded their scores in the previous session, access to one item from the goody box was allowed. The generalization passage was administered immediately after the reward passage.

Listening passage preview/repeated readings/reward (Appendix I). This condition was conducted in the same manner as LPP/RR except that the child earned a reward if she or he exceeded their score in WCPM from the previous session. The reward component was administered in the same manner as the reward condition described above. The generalization passage was administered at the end of the condition.

Experimental Design and Procedures

Brief Experimental Analysis. During the BEA, a brief multielement design was applied to compare the effects of each experimental condition (i.e., LPP, Re, RR, LPP/RR, and LPP/RR/Re) to baseline and to other conditions. The purpose was to identify the intervention or intervention package that produced the greatest gains in students' oral reading fluency with least time and adult effort needed. Following a test of each condition, a miniwithdrawal was introduced to provide a stronger demonstration of experimental control.

The sequence of the conditions was randomized within and across participants. Each condition was applied to one instructional passage and only one datum was collected. The generalization effects of each condition were also evaluated by having the students read the corresponding generalization passage at the end of the treatment condition. Generalization data were collected in the same manner as the treatment data. The treatment or treatment package that produced best performance for instructional passage with best generalization effects was selected to be implemented in the extended analysis. If the best performance and the best generalization did not match, the treatment/package that produced the best performance for the instructional passage was selected.

Extended analysis. After the BEA, parents implemented the identified treatment or treatment package with their child three to five days per week, with no more than two sessions occurring in one day, for several weeks. During the entire duration of extended analysis, students' progress was monitored two times per week. The parent assessed generalization one time at home, and the experimenter individually met with each student in clinic once per week to monitor their progress. Progress monitoring passages were randomly selected from AIMSweb reading probes at each student's current grade level.

Treatment integrity. All reading intervention sessions conducted by parents were audiotaped. The primary experimenter and a trained graduate student in School Psychology randomly chose 35% of the audiotaped sessions to complete the Treatment Integrity Checklist (Appendix J and K) and provided feedback to parents accordingly. The percentage of intervention steps correctly implemented by the parents during the reading intervention sessions was calculated based on the number of intervention steps

correctly completed by the parents divided by the total number of intervention steps on the intervention protocol and multiplied by 100. The treatment integrity for BEA was 100% for all three parent participant. The average treatment integrity for the intervention phase for C. J.'s mother was 94.8% (range, 85.7-100%). Treatment integrity was 92.0% (range, 87.5-100%) for C.C.'s mother and 93.8% (range, 87.5-100%) for R.E.'s mother.

Inter-observer agreement. IOA was defined as the percentage agreement of occurrences and non-occurrences of the dependent variables between two data collectors. The primary experimenter and previously trained graduate students in school psychology collected IOA data. The students listened to randomly selected audiotape recorded sessions and scored the passage for WCPM and EPM. IOA was calculated by dividing the number of agreements by the number of agreements plus the number of disagreements and multiplying by 100. The standard was set at 80%. IOA was collected for 56% of C. J.'s reading sessions. IOA ranged from 93.6-100% for the baseline reading session ($M = 97.3\%$) and from 98.1-100% ($M = 99.5\%$) during reading intervention and progress monitoring sessions. IOA was collected for 38% of C.C.'s reading sessions. IOA ranged from 98.3 -100% for the baseline reading sessions ($M = 99.8\%$). IOA ranged from 91-97% ($M = 94\%$) for reading intervention and progress monitoring sessions. IOA was collected for 46% of R.E.'s reading sessions. IOA was 100 for baseline reading sessions and ranged from 88-100% (M = 97.5%) for reading intervention and progress monitoring sessions.

Data Analysis

Data analysis included visual analysis of WCPM and EPM. Visual analysis of BEA data included inspection of level as single sessions occurred for each condition

which precludes inspection of variability and trend. The selection criteria for the most

effective treatment condition were based on the decision-making steps described in

Malloy et al. (2007). First, in order to be identified as the most effective condition, the

treatment had to have the largest gains in WCPM on instructional passage when

compared to baseline, the treatment also had to have relatively larger gains in WCPM on

generalization passage when compared to baseline. If one condition was identified, a

second baseline was introduced as a miniwithdrawal, and the identified condition was

once again administered for validation. If two conditions were selected, the one that

required the least time and adult effort was considered the most effective condition and

further validated using the withdrawal procedure described above. Data analysis for the

extended analysis included evaluation of level, trend, and variability.

CHAPTER IV

RESULTS

BEA Implementation Integrity

All three mothers implemented their child's BEA in two sessions following training. During the first session, five conditions (LPP, RR, Re, LPP+RR, LPP+RR+Re) were implemented in random order. During the second session, a miniwithdrawal was conducted by implementing a baseline condition, and then the condition that produced the student's best oral reading performance in the first session was re-implemented to confirm or disconfirm the conclusion of the initial analysis. If the condition continued to produce improved student performance, then the conclusion was confirmed and the condition was selected to use for intervention. All three mothers conducted their child's BEA with 100% integrity. It is important to note, however, that the primary experimenter was present during all BEA sessions.

Students Oral Reading Outcomes

C. J. C. J.'s reading performance is illustrated in Figure 1. During baseline, C. J. received scores of 52, 59, and 41 WCPM, her median score was 52 WCPM, and $M =$ 50.7. EPM were 5, 2, and 5. During the BEA, C. J.'s best performance occured in the LPP condition. Her instructional scores in LPP were 82 WCPM and 1EPM. For the corresponding generalization passage, she read 71 WCPM and made 1EPM. Following the miniwithdrawal, C. J. read 75 WCPM and made 2 EPM. For generalization, she read 71 WCPM and made 0 EPM. Consequently, LPP was deemed the most effective intervention based on results from the BEA.
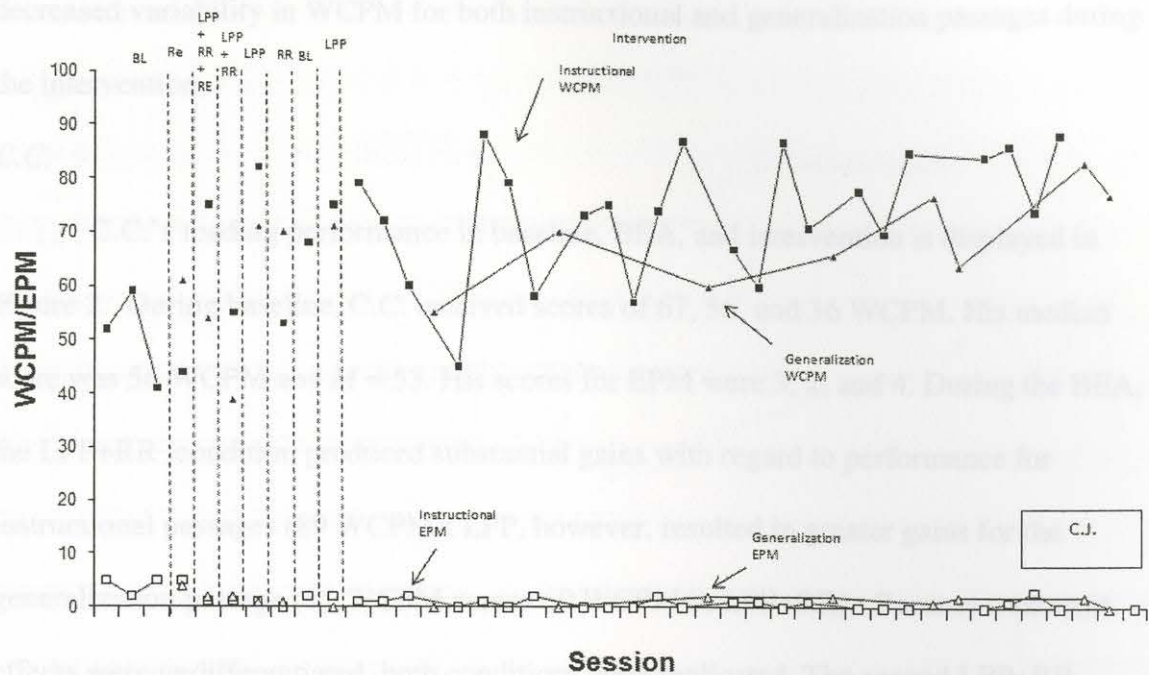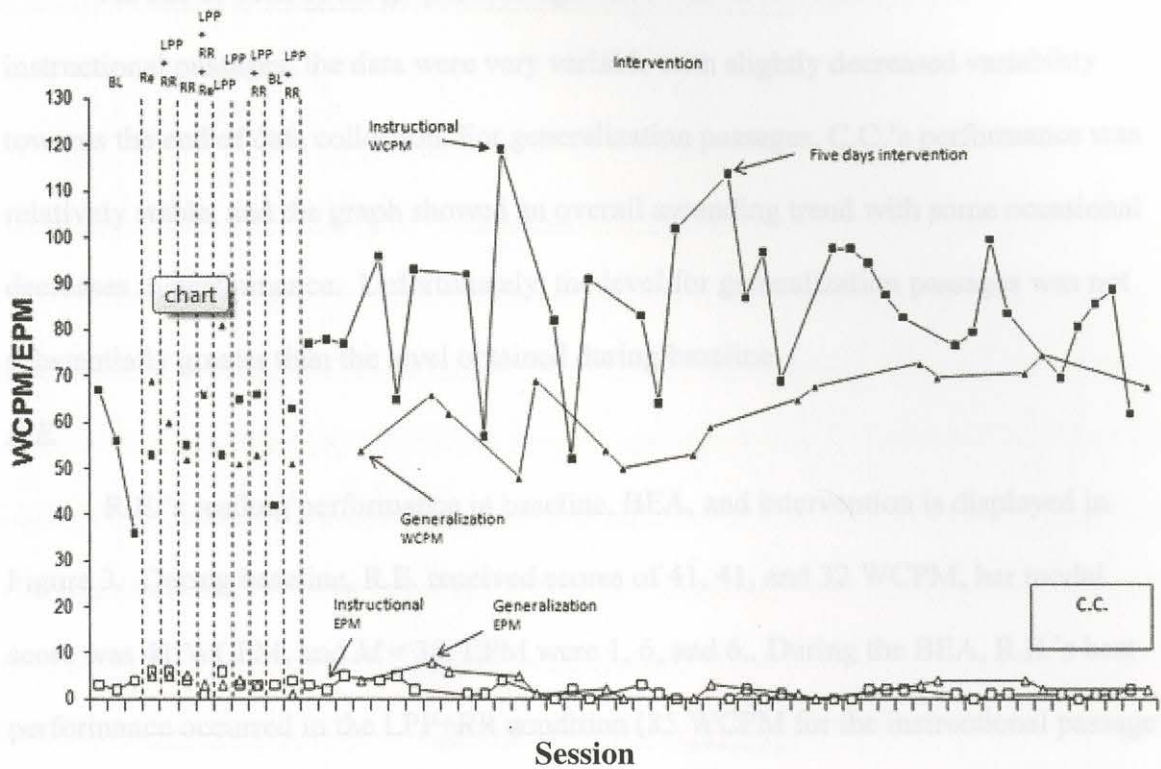
Figure 1. Number of WCPM and EPM in instructional passages and generalization passages during baseline, BEA, and intervention for C. J.

During intervention, C. J.'s reading scores for instructional passages ranged from 45 to 88 WCPM with a mean of 74.1. Her EPM scores ranged from 0 to 3 with a mean of 0.7. C. J.'s socres for generalization passages ranged from 55 to 83 WCPM with a mean of 69.0 WCPM; EPM ranged from 0 to 2 with a mean of 1.1. It should be noted that, during the 3rd week of the intervention, C. J.'s mother implemented five sessions of intervention per week instead of three to five sessions as previously described. Treatment strength was increased due to lack of substantial progress. Over the duration of six weeks' intervention, C. J. achieved an oral reading fluency gain of 3.1 words per week, which is above the expected gain of 2 words per week for a first grade general education student (Deno et al., 2001). The graph showed an ascending trend, increased level, and

decreased variability in WCPM for both instructional and generalization passages during the intervention.

C.C.

C.C.'s reading performance in baseline, BEA, and intervention is displayed in Figure 2. During baseline, C.C. received scores of 67, 56, and 36 WCPM. His median score was 56 WCPM and $M = 53$. His scores for EPM were 3, 2, and 4. During the BEA, the LPP+RR condition produced substantial gains with regard to performance for instructional passages (89 WCPM); LPP, however, resulted in greater gains for the generalization passage (81 WCPM versus 60 WCPM in LPP+RR). Because treatment effects were undifferentiated, both conditions were replicated. The second LPP+RR condition produced slightly better performance in both instructional and generalization passages than the second LPP (66 versus 65 WCPM in instructional passages and 53versus 51 in generalization passages). Moreover, C.C.'s mother indicated that she preferred LPP+RR. Therefore, LPP+RR was selected as the condition to be replicated after the miniwithdrawal phase. Following the miniwithdrawal, LPP+RR resulted in sustained improved oral reading performance (63 WCPM).

Figure 2. Number of WCPM and EPM in instructional passages and generalization passages during baseline, BEA, and intervention for C.C..

During intervention, C.C.'s reading scores in instructional passages ranged from 52 to 119 WCPM with a mean of 84.4. His EPM scores ranged from 0 to 5 with a mean of 2.3. C.C.'s scores in generalization passages ranged from 48 to 75 WCPM with a mean of 62.8 WCPM; EPM ranged from 0 to 8 with a mean of 2.8. It is important to note that starting the sixth week of intervention, the experimenters decided to increase the intensity of the intervention because C.C.'s performance had not improved as expected for the first five weeks of intervention. As a result, instead of implementing the intervention three to five times per week, C.C.'s mother was asked to implement intervention five times per week.

As can be seen in the graph, although there was an increased level in WCPM for instructional passages; the data were very variable with slightly decreased variability towards the end of data collection. For generalization passages, C.C.'s performance was relatively stable, and the graph showed an overall ascending trend with some occasional decreases in performance. Unfortunately, the level for generalization passages was not substantially greater than the level obtained during baseline.

R.E.

R.E.'s reading performance in baseline, BEA, and intervention is displayed in Figure 3. During baseline, R.E. received scores of 41, 41, and 32 WCPM, her modal score was 41 WCPM, and $M = 38$. EPM were 1, 6, and 6.. During the BEA, R.E.'s best performance occurred in the LPP+RR condition (85 WCPM for the instructional passage and 53 WCPM for the generalization passage). Following a miniwithdrawal, performance during LPP+RR was again improved relative to baseline (85 WCPM for instructional passage and 50 WCPM for generalization passage. Therefore, LPP+RR was selected as the most effective intervention for R.E.

During intervention, R.E.'s reading scores in instructional passages ranged from 42 to 107 WCPM with a mean of 69.5. Her EPM scores ranged from 0 to 7 with a mean of 2.1. R.E.'s scores for generalization passages ranged from 32 to 62 WCPM with a mean of 50.8 WCPM; EPM ranged from 0 to 5 with a mean of 3. As can be seen in the graph, across the intervention, R.E.'s performance had been very variable for both the instructional and generalization passages. Although the graph showed an ascending trend for instructional passages, there were no substantial generalization effects for WCPM.
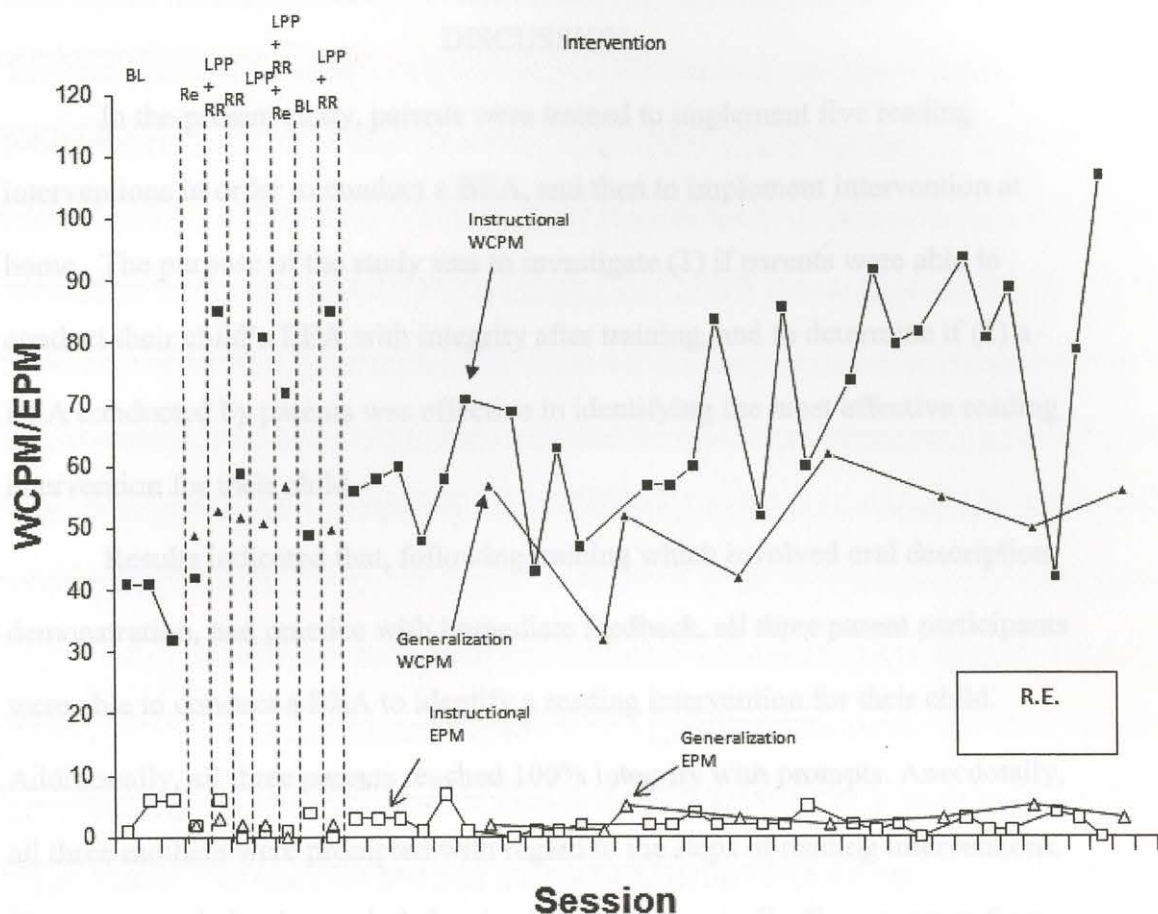
Figure 3. Number of WCPM and EPM in instructional passages and generalization passages during baseline, BEA, and intervention for R.E..

CHAPTER V

DISCUSSION

In the present study, parents were trained to implement five reading interventions in order to conduct a BEA, and then to implement intervention at home. The purpose of the study was to investigate (1) if parents were able to conduct their child's BEA with integrity after training, and to determine if (2) a BEA conducted by parents was effective in identifying the most effective reading intervention for their child.

Results indicated that, following training which involved oral description, demonstration, and practice with immediate feedback, all three parent participants were able to conduct a BEA to identify a reading intervention for their child. Additionally, all three parents reached 100% integrity with prompts. Anecdotally, all three mothers were prompted with regard to the steps of reading interventions. They also needed to be reminded to implement the generalization passages from time to time. This may suggest that, in order for parents to be able to conduct BEAs independently, more training or practice may be needed. Unfortunately, systematic data were not collected regarding the number of prompts needed for accurate implementation or the specific steps that most often required prompting.

Following BEA, three parents implemented the identified interventions (LPP, LPP+RR, and LPP+RR, respectively for C. J., C.C., and R.E.) with their child at their respective homes. The average treatment integrity for the intervention phase for C. J.'s mother was 94.8% (range, 85.7-100%). Treatment integrity was 92.0% (range, 87.5-100%) for C.C.'s mother and 93.8% (range,

87.5-100%) for R.E.'s mother. Treatment integrity data for intervention implementation at home indicates that parents implemented sessions with no prompting from the researcher. However, it is worthy of note that the generalization passages were not consistently implemented. It is very encouraging to know that following training, parents were able to implement interventions with integrity because, as discussed earlier, parents are in a better position than teachers to provide individualized interventions. Moreover, future research may continue to evaluate parents' ability to implement a variety of reading interventions.

Student outcome data showed that all three student participants made gains in their oral reading fluency for intervention passages, but results for generalization passages were mixed. Among the three students, C. J. made the biggest gains. Her mean WCPM was 50.7 in baseline and 69.0 for the generalization passages during intervention. Her baseline mean placed her at the instructional level (40-60 WCPM) for first grade reading probes, while her mean (60+ WCPM) in generalization placed her at the mastery level (Fuchs, Fuchs, & Deno, 1982). C.C.'s baseline mean was 53 WCPM, whereas his mean in generalization passages was 62.8 WCPM. However, his WCPM for four consecutive generalization sessions was above 70 near the end of intervention. Those scores fall in the instructional level of performance for 3rd grade reading passages. R.E.'s oral reading placement moved up one level from frustrational to instructional for first grade reading probes when her means increased from 38 WCPM in baseline to 50.8 WCPM in generalization passages. Consequently,

although C.C. and R.E.'s mean levels of performance did not improve as much as C. J.'s, they did make improvements in their oral reading fluency.

One thing that is noteworthy is that four weeks of C.C.'s nine-week intervention occurred in the summer break, and the entire nine-week intervention occurred in the summer break for R.E.. Research (Kerry & Davis, 1998) has suggested that students' academic performance deteriorates over long breaks such as summer breaks due to the lengthy interruption to their studies. Therefore, one possible explanation for C.C. and R.E. not improving as much as C. J. is because intervention at home occurred without the additive benefit of routine reading practice at school. It was also hypothesized that C.C. and R.E. might need more intensive interventions for them to be able to make substantial gains in reading fluency.

However, it is noteworthy that C.C. and R.E.'s reading performance still improved despite not practicing at school. This result suggests that reading programs may be necessary in order to prevent students' reading performance from deteriorating over long summer breaks. This may be especially true for those students with the most substantial reading fluency deficits.

The present study has several limitations. First, the parent participants were prompted by the primary experimenter when they conducted the BEA. As a result, there was not a true test for the first research question in that parents were never allowed to implement a BEA with poor integrity. Moreover, there was never a second opportunity to conduct a BEA by the parents without assistance from the primary experimenter.

Second, all student participants involved in this study were general education elementary students. It is not known to what extent this model of parent-lead intervention would have similar effects on students at different grade levels and those with disabilities. Third, there were only three parent participants, and there were no data collected on their demographic information. Therefore, great caution should be used when generalizing the findings of this study to other parent groups.

Parental involvement in reading is an important area that is worth investigating. Unfortunately, the results of the current study are not very compelling. Future research may include evaluation of more intense interventions implemented by parents in the home setting. Additionally, future research may evaluate effectiveness of parent implemented reading intervention at home combined with consistent implementation of reading intervention in the school setting. Again, the results of this study are at least encouraging with regarding to parents' ability to implement intervention at home for an extended period of time.

APPENDIX A

PARENT CONSENT FORM

Dear Parent,

     I am a doctoral student at the University of Southern Mississippi working under the direction of Dr. Brad Dufrene, Ph.D. I am currently working on my Master's thesis in the area of reading deficits. I will be investigating the utility of brief experimental analysis (BEA) in identifying the most effective reading intervention for individual students to improve reading fluency. You are receiving this form because you come in our clinic for concerns with regard to your child's reading performance.

     With your permission, you and your child will be participating in my thesis project. This will involve an experiment. The experiment will involve you coming to our clinic for a training session that lasts approximately one to one and a half hours. Then you will conduct the BEA to your child to identify the most effective reading intervention for your child. Finally, you will implement the identified reading intervention to your child for three or four times a week for approximately 15-20 minutes. The reading intervention will be targeted to increase your child's reading fluency, or rate of reading.

     As the primary investigator in this project, I will be training you on how to conduct the BEA. I will also be training graduate students to conduct observations to make sure the interventions are administered correctly.

     Your child may benefit from increased reading fluency as a result of this project. There are no negative side effects expected to occur in relation to this project. Even if you give your consent for this project, you may withdraw you and your child's participation at any time, without penalty or loss to yourself or your child.

     If you agree to participate in this project, please read and sign the following page. If you have any questions, please contact myself, Qi Zhou, or Dr. Dufrene at (601) 266-5255. This project and this consent form have been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the Institutional Review Board Office, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406-5147, (601) 266-6820.

Sincerely,

_____
Qi Zhou
School Psychologist-in-Training

TO BE COMPLETED BY THE PARENT

Please read the following and sign:

I have read the above statement and consent to my participation in the research project. I have had the purpose and procedures of the study explained to me and have had the opportunity to ask questions. I understand that my consent is voluntary and I may withdraw my participation at any time, without penalty or loss to myself or my child. I understand that my child will be receiving a reading intervention. I understand that my child's participation is confidential, as is the participation of my child's teacher.

_____   _____
Signature of Parent   Date

APPENDIX B

INSTITUTIONAL REVIEW BOARD DOCUMENTATION

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

Institutional Review Board

118 College Drive #5147
Hattiesburg, MS 39406-0001
Tel: 601.266.6820
Fax: 601.266.5509
www.usm.edu/irb

HUMAN SUBJECTS PROTECTION REVIEW COMMITTEE
NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Human Subjects Protection Review Committee in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **28091502**
PROJECT TITLE: **The Effects of Brief Analysis in Improving Reading Fluency When Implemented by Parents**
PROPOSED PROJECT DATES: **09/15/08 to 05/31/09**
PROJECT TYPE: **Dissertation or Thesis**
PRINCIPAL INVESTIGATORS: **Qi Zhou**
COLLEGE/DIVISION: **College of Education & Psychology**
DEPARTMENT: **Psychology**
FUNDING AGENCY: **N/A**
HSPRC COMMITTEE ACTION: **Expedited Review Approval**
PERIOD OF APPROVAL: **09/22/08 to 09/21/09**

Lawrence A. Hosman   9-23-08
Lawrence A. Hosman, Ph.D.   Date
HSPRC Chair

APPENDIX C

BRIEF EXPERIMENTAL ANALYSIS PROCEDURES

1. Administer at least three baseline probes at the student's grade level.
2. Administer each component of the assessment to your child (i. e., Listening Passage Preview, Repeated Reading, Reward, Listening Passage Preview with Repeated Reading, Listening Passage Preview with Repeated Reading with Reward) in a randomized order
3. After the administration of each component, administer the corresponding generalization passage.
4. Following administration of all components and combinations of components, administer one baseline probe
5. Re-administer the most effective component of combination of components to replicate results

APPENDIX D

BRIEF EXPERIMENTAL ANALYSIS INTEGRITY CHECKLIST

Materials Checklist:
- ☐ Student Score Report Form (Appendix L)
- ☐ Examiner Copy of the Instructional Passages
- ☐ Student Copy of the Instructional Passages
- ☐ Examiner Copy of the Generalization Passages
- ☐ Student Copy of the Generalization Passages
- ☐ Scripts for interventions.
- ☐ Stopwatch or Digital Timer
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Tape Recorder (Optional)
- ☐ Tape (Optional)

Script:
- ☐ 1. Color-code the back of the student probes for each different condition except for the baseline probes.
- ☐ 2. Administer baseline condition at the beginning and end of the BEA.
- ☐ 3. Random order the interventions for each participant.
- ☐ 4. Administer the interventions according to the steps listed on the scripts.
- ☐ 5. When an intervention demonstrates a clearly visible difference relative to baseline and other instructional conditions, administer a baseline condition followed by the last effective treatment condition.
- ☐ 5. Administer a generalization probe after each intervention.
- ☐ 6. Record the number of words read correctly and errors made in one-minute on the Student Score Report Form.

APPENDIX E

LISTENING PASSAGE PREVIEW SCRIPT

Materials Checklist:
- ☐ Student Score Report Form
- ☐ Examiner Copy of the Instructional Passage
- ☐ Student Copy of the Instructional Passage
- ☐ Stopwatch or Digital Timer
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Audiocassette Recorder
- ☐ Cassette tape

Script:
- ☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you, but shielded so that the student cannot see what you record.
- ☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "HERE IS A STORY THAT I WOULD LIKE FOR YOU TO READ. HOWEVER, I AM GOING TO READ THE STORY TO YOU FIRST. PLEASE FOLLOW ALONG WITH YOUR FINGER, READING THE WORDS TO YOURSELF AS I SAY THEM. START AT THE TOP OF THE PAGE (point to the top of the page) AND GO ACROSS THE PAGE (demonstrate by pointing)."
- ☐ 3. Read the entire passage at a comfortable reading rate (approximately 130 words per minute), making sure that the student is following along with his or her finger.
- ☐ 4. When you have finished reading the passage for the student, say: "NOW I WANT YOU TO READ THE STORY TO ME. WHEN I SAY START, BEGIN READING AT THE TOP OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"
- ☐ 5. Say "BEGIN!" and start the stopwatch when the student says the first word.
- ☐ 6. If the student hesitates on a word for more than 3 seconds, say the word and place a line (/) through it. Place a line (/) through any word that is missed (i.e., skipped, misread, transposed).

☐ 7. At the end of one-minute, place a closed bracket (]) after the last word read and allow the student to finish reading the entire passage.

☐ 8. When the student completes the entire passage, count the number of words read correctly and errors made in one minute.

☐ 9. Tell the student her/his score for the day.

☐ 10. Record the number of words read correctly and errors made in one-minute on the Student Score Report Form.

Materials:

☐ Examiner Copy of the Instructional Passage

☐ Student Copy of the Instructional Passage

☐ Stopwatch

☐ Pen or Pencil

☐ Clipboard

☐ Audiocassette recorder

☐ Cassette tape

Script:

☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you but shielded so that the student cannot see what you record.

☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "WE'RE GOING TO PRACTICE READING A STORY SEVERAL TIMES TO HELP YOU GET BETTER AT READING. HERE IS THE STORY THAT I WOULD LIKE FOR YOU TO PRACTICE READING. READ THE STORY ALOUD. TRY TO READ EACH WORD. IF YOU COME TO A WORD YOU DON'T KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"

☐ 3. Say "BEGIN" and start the stopwatch when the student says the first word.

☐ 4. If the student hesitates on a word for more than three seconds, tell the student the word and place a line (/) through it. Place a line (/) through any word that is missed (i.e., skipped, mispronounced, transposed).

☐ 5. At the end of one minute, place a closed bracket (]) after the last word read BUT allow the student to finish reading the entire passage.

☐ 6. Tell the student to stop reading at the end of the passage. Tell the student how many words he/she read correctly in one minute.

☐ 7. Repeat the above procedures three times.

☐ 8. Record the number of words read correctly and errors made (from the final reading) in one-minute on the Student Score Report Form.

APPENDIX F

REPEATED READINGS SCRIPT

<u>Materials Checklist:</u>
- ☐ Student Score Report Form
- ☐ Examiner Copy of the Instructional Passage
- ☐ Student Copy of the Instructional Passage
- ☐ Stopwatch
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Audiocassette recorder
- ☐ Cassette tape

<u>Script:</u>
- ☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you but shielded so that the student cannot see what you record.
- ☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "WE'RE GOING TO PRACTICE READING A STORY SEVERAL TIMES TO HELP YOU GET BETTER AT READING. HERE IS THE STORY THAT I WOULD LIKE FOR YOU TO PRACTICE READING. READ THE STORY ALOUD. TRY TO READ EACH WORD. IF YOU COME TO A WORD YOU DON'T KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"
- ☐ 3. Say "BEGIN!" and start the stopwatch when the student says the first word.
- ☐ 4. If the student hesitates on a word for more than three seconds, tell the student the word and place a line (/) through it. Place a line (/) through any word that is missed (i.e., skipped, misread, transposed).
- ☐ 5. At the end of one minute, place a closed bracket (]) after the last word read <u>BUT</u> allow the student to finish reading the entire passage.
- ☐ 6. Tell the student to stop reading at the end of the passage. Tell the student how many words he/she read correctly in one minute.
- ☐ 7. Repeat the above procedure three times.
- ☐ 8. Record the number of words read correctly and errors made (from the final reading) in one-minute on the Student Score Report Form.

APPENDIX G

LISTENING PASSAGE PREVIEW + REPEATED READINGS SCRIPT

Materials Checklist:
- ☐ Student Score Report Form
- ☐ Examiner Copy of the Instructional Passage
- ☐ Student Copy of the Instructional Passage
- ☐ Stopwatch or Digital Timer
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Audiocassette recorder
- ☐ Cassette tape

Script:
- ☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you, but shielded so that the student cannot see what you record.
- ☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "HERE IS A STORY THAT I WOULD LIKE FOR YOU TO READ. HOWEVER, I AM GOING TO READ THE STORY TO YOU FIRST. PLEASE FOLLOW ALONG WITH YOUR FINGER, READING THE WORDS TO YOURSELF AS I SAY THEM. START AT THE TOP OF THE PAGE (point to the top of the page) AND GO ACROSS THE PAGE (demonstrate by pointing)."
- ☐ 3. Read the entire passage at a comfortable reading rate (approximately 130 words per minute), making sure that the student is following along with his or her finger.
- ☐ 4. When you have finished reading the passage for the student, say: "NOW I WANT YOU TO READ THE STORY SEVERAL TIMES TO ME. WHEN I SAY START, BEGIN READING AT THE TOP OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"
- ☐ 5. Say "BEGIN!" and start the stopwatch when the student says the first word.
- ☐ 6. If the student hesitates on a word for more than 3 seconds, say the word and place a line (/) through it. Place a line (/) through any word that is missed (i.e., skipped, misread, and transposed).

☐ 7. At the end of one-minute, place a closed bracket (]) after the last word read and allow the student to finish reading the entire passage.

☐ 8. When the student completes the entire passage, count the number of words read correctly and errors made in one-minute.

☐ 9. Repeat the above procedure three times. For each administration, record the number of words read correctly and errors made in one-minute. After the final reading, tell the student the number of words he/she read correctly in one-minute for that reading.

☐ 10. Record the number of words read correctly and errors made (from the final reading) in one-minute on the Student Score Report Form.

APPENDIX H

REWARD SCRIPT

Materials Checklist:

- ☐ Student Score Report Form
- ☐ Examiner Copy of the Instructional Passage
- ☐ Student Copy of the Instructional Passage
- ☐ Stopwatch or Digital Timer
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Audiocassette recorder
- ☐ Cassette tape

Script:

- ☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you, but shielded so that the student cannot see what you record.
- ☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "EARLIER YOU READ A STORY TO ME AND YOU READ __ WORDS CORRECT IN ONE MINUTE. NOW, I WANT YOU TO READ ANOTHER STORY. THIS TIME, IF YOU READ MORE WORDS CORRECTLY THAN __ YOU WILL GET TO PICK A PRIZE FROM THIS GOODIE BOX (show the student the goodie box and allow her or him to explore the items in the goodie box).
- ☐ 3. Say: "NOW I WANT YOU TO READ THIS STORY TO ME. WHEN I SAY START, BEGIN READING AT THE TOP OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"
- ☐ 4. Answer any questions that the student asks.
- ☐ 5. Say "BEGIN!" and start the stopwatch when the student says the first word.
- ☐ 6. While the student is reading the passage aloud, follow along on the Examiner Copy marking errors. Mark a [/] through each error. If the student hesitates on a word for more than 3 seconds, say the word and place a line (/) through it.
- ☐ 7. At the end of one-minute, place a closed bracket (]) after the last word read and allow the student to finish reading the entire passage.

☐ 8. When the student completes the entire passage, count the number of words read correctly and errors made in one-minute.

☐ 9. If the child's score is greater than the median from baseline or from the previous session, say, "GREAT WORK! YOU MET THE GOAL AND EARNED A REWARD!" allow the child to choose a reward from the goodie box.

☐ 10. If the child did not meet the goal, say "NICE TRY, BUT YOU DID NOT BEAT YOUR GOAL. YOU MAY HAVE ANOTHER CHANCE TO EARN A REWARD LATER."

APPENDIX I

LISTENING PASSAGE PREVIEW + REPEATED READING + REWARD SCRIPT

Materials Checklist:
- ☐ Student Score Report Form
- ☐ Examiner Copy of the Instructional Passage
- ☐ Student Copy of the Instructional Passage
- ☐ Stopwatch or Digital Timer
- ☐ Pen or Pencil
- ☐ Clipboard
- ☐ Audiocassette recorder
- ☐ Cassette tape

Script:
- ☐ 1. Place the Examiner Copy of the Instructional Passage on the clipboard in front of you, but shielded so that the student cannot see what you record.
- ☐ 2. Present the Student Copy of the Instructional Passage to the student, saying: "HERE IS A STORY THAT I WOULD LIKE FOR YOU TO READ. HOWEVER, I AM GOING TO READ THE STORY TO YOU FIRST. PLEASE FOLLOW ALONG WITH YOUR FINGER, READING THE WORDS TO YOURSELF AS I SAY THEM. START AT THE TOP OF THE PAGE (point to the top of the page) AND GO ACROSS THE PAGE (demonstrate by pointing)."
- ☐ 3. Read the entire passage at a comfortable reading rate (approximately 130 words per minute), making sure that the student is following along with his or her finger.
- ☐ 4. When you have finished reading the passage for the student, say: "NOW I WANT YOU TO READ THE STORY SEVERAL TIMES TO ME. WHEN I SAY START, BEGIN READING AT THE TOP OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"
- ☐ 4. Answer any questions that the student asks.
- ☐ 5. Say "BEGIN!" and start the stopwatch when the student says the first word.
- ☐ 6. While the student is reading the passage aloud, follow along on the Examiner Copy marking errors. Mark a [/] through each error. If the

student hesitates on a word for more than 3 seconds, say the word and place a line (/) through it.

☐ 7. Before the final reading, say, "EARLIER YOU READ A STORY TO ME AND YOU READ __ WORDS CORRECT IN ONE MINUTE. THIS TIME, IF YOU READ MORE WORDS CORRECTLY THAN __ YOU WILL GET TO PICK A PRIZE FROM THIS GOODIE BOX (show the student the goodie box and allow her or him to explore the items in the goodie box).

☐ 8. At the end of one-minute, place a closed bracket (]) after the last word read and allow the student to finish reading the entire passage.

☐ 9. When the student completes the entire passage, count the number of words read correctly and errors made in one-minute.

☐ 10. If the child's score is greater than the median from baseline or from the previous session, say, "GREAT WORK! YOU MET THE GOAL AND EARNED A REWARD!" allow the child to choose a reward from the goodie box.

☐ 11. If the child did not meet the goal, say "NICE TRY, BUT YOU DID NOT BEAT YOUR GOAL. YOU MAY HAVE ANOTHER CHANCE TO EARN A REWARD LATER.

APPENDIX J

LISTENING PASSAGE PREVIEW + REPEATED READINGS
TREATMETN INTEGRITY CHECKLIST

☐ Parent says: "HERE IS A STORY THAT I WOULD LIKE FOR
YOU TO READ. HOWEVER, I AM GOING TO READ THE
STORY TO YOU FIRST. PLEASE FOLLOW ALONG WITH
YOUR FINGER, READING THE WORDS TO YOURSELF AS I
SAY THEM. START AT THE TOP OF THE PAGE AND GO
ACROSS THE PAGE."

☐ 3. Read the entire passage at a comfortable reading rate
(approximately 130 words per minute.

☐ 4. When the parent have finished reading the passage for the child, say:
"NOW I WANT YOU TO READ THE STORY SEVERAL TIMES
TO ME. WHEN I SAY START, BEGIN READING AT THE TOP
OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO
NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR
BEST READING. DO YOU HAVE ANY QUESTIONS?"

☐ 5.Have the child practice reading two times.

☐ 6. Start the timer when the student says the first word in the third
reading.

☐ 7. Marked errors and placed a closed bracket (]) after the last word
read at the end of one minute in the third reading.

☐ 8. Allow the student to finish reading the entire passage.

APPENDIX K

LISTENING PASSAGE PREVIEW TREATMENT INTEGRITY CHECKLIST

☐ 1. Parent says: "HERE IS A STORY THAT I WOULD LIKE FOR YOU TO READ. HOWEVER, I AM GOING TO READ THE STORY TO YOU FIRST. PLEASE FOLLOW ALONG WITH YOUR FINGER, READING THE WORDS TO YOURSELF AS I SAY THEM. START AT THE TOP OF THE PAGE (point to the top of the page) AND GO ACROSS THE PAGE (demonstrate by pointing)."

☐ 2. Read the entire passage at a comfortable reading rate (approximately 130 words per minute), making sure that the student is following along with his or her finger.

☐ 3. When you have finished reading the passage for the student, say: "NOW I WANT YOU TO READ THE STORY TO ME. WHEN I SAY START, BEGIN READING AT THE TOP OF THE PAGE. IF YOU COME TO A WORD THAT YOU DO NOT KNOW, I WILL TELL IT TO YOU. BE SURE TO DO YOUR BEST READING. DO YOU HAVE ANY QUESTIONS?"

☐ 4. Say "BEGIN!" and start the stopwatch when the student says the first word.

☐ 5. If the student hesitates on a word for more than 3 seconds, say the word and place a line (/) through it. Place a line (/) through any word that is missed (i.e., skipped, misread, transposed).

☐ 6. At the end of one-minute, place a closed bracket (]) after the last word read and allow the student to finish reading the entire passage.

☐ 7. When the student completes the entire passage, count the number of words read correctly and errors made in one minute.

APPENDIX L

STUDENT SCORE REPORT FORM

Date	Passage number/name	WCPM	EPM
Progress monitoring			
Progress monitoring			

REFERENCES

Chafouleas, S. M., Marten, 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 reading on students' reading and error rates. *Journal of Behavioral Education, 13,* 67-81.

Daly, E. J., Martens, B. K. (1994). A comparison of three interventions for increasing oral reading performance: Application of instructional hierarchy. *Journal of Applied Behavior Analysis, 27,* 459-469.

Daly, E. J., Martens, B. K., Hamler, K. R., Dool, E. J. & Eckert, T. L. (1999). A brief experimental analysis for identifying instructional components needed to improve oral reading fluency. *Journal of Applied Behavior Analysis, 32,* 83-94.

Daly, E. J., III, Murdoch, A., Lillenstein, L., Webber, L., & Lentz, F. W. (2002). An examination of methods for testing treatments: conducting brief experimental analyses of the effects of instructional components on oral reading fluency. *Education and Treatment of Children, 25,* 288-316.

Daly, E., J., III, Bonfiglio, C. M., Mattson, T., Persampieri, M., Foreman-Yates, K. (2006). Defining the experimental analysis of academic skills deficits: Part II. Use of brief experimental analysis to evaluate reading fluency treatments. *Journal of Applied Behavior Analysis, 39,* 323-331.

Deno, S.L., Fuchs, L.S., Marston, D., & Shin, J. (2001). Using curriculum-based measurement to establish growth standards for students with learning disabilities. *School Psychology Review, 30,* 507-524.

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

Dufrene, B. A., & Warzak, W. J. (2006). Brief experimental analysis of Spanish reading fluency: an exploratory evaluation. *Journal of Behavioral Education, 16,* 143-154.

Eckert, T. L., Ardoin, S. P., Daisey, D. M, & Scarola, M. D. (2000). Empirically Evaluating the effectiveness of reading interventions: the use of brief experimental analysis and single case designs. *Psychology in the Schools, 37,* 463-473.

Eckert, T.L., Ardoin, S. P., Daly, E. J., & Martens, B. K. (2002). Improving oral reading fluency: A brief experimental analysis of combining an antecedent intervention with consequences. *Journal of Applied Behavior Analysis, 35,* 271-281.

Fewster, S., & Macmillan, P. D. (2002). School-based evidence for the validity of curriculum-based measurement of reading and writing. *Remedial and Special Education, 23,* 149-156.

Francizs, D. J., Shaywitz, S. E., Stuebing, K. K., Shaywitz, B. A., & Fletcher, J. M. (1996). Developmental lag versus deficit models of reading disability: A longitudinal, individual growth curves analysis. *Journal of Educational Psychology, 88,* 3-17.

Fuchs, L.S., Fuchs, D., & Deno, S. (1982). Reliability and validity of curriculum-based informal reading inventories. *Reading Research Quarterly, 18,* 6-26.

Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical and historical analysis. *Scientific Studies of Reading, 5,* 239-256.

Gardner, E. F., Rudman, H. C., Karlsen, B., & Merwin, J. C. (1982). Stanford

Achievement Test. Iowa City, IA: Harcourt Brace Jovanovich.

Good, R.H., & Kaminski, R.A. (Eds.). (2002). *Dynamic Indicators of Basic Early Literacy Skills* (6th ed.). Eugene, OR: Institute for the Development of Educational Achievement.

Haring, N. G., Lovitt, T. C., Eaton, M. D., & Hansen, L. L. (1978). The fourth R: Research in the classroom. Columbus: Merrill.

Hintze, J. M., Christ, T. J., & Methe, S. A. (2006). Curriculum-based assessment. *Psychology in the Schools, 43*, 45-56.

Homan, S. P., Klesius, J. P., & Hite, C. (1993). Effects of repeated readings and nonrepetitive strategies on students' fluency and comprehension. *Journal of Educational Research, 87,* 94-99.

Kerry, T., & Davis, B. (1998). Summer learning loss: The evidence and a possible solution. *Support for Learning, 13,* 118-122.

Malloy, K. J., Gilbertson, D., & Maxfield, J. (2007). Use of brief experimental analysis for selecting reading interventions for English language learners. *School Psychology Review, 36,* 291-310.

Marston, D. B. (1989). A curriculum-base measurement approach to assessing academic performance: What it is and why do it. In M. R. Shinn (Ed.), *Curriculum-Based Measurement: Assessing Special Children (pp. 18-78).* New York: Guilford Press.

McMackin, M. (1993). The parent's role in literacy development. *Childhood Education, 69,* 142-145.

National Center for Educational Statistics. (2007). National assessment of educational progress. Available on the internet: http://www.nces.ed.gov/naep

National Institutes of Child Health and Human Development (2000). *Report of the National Reading Panel*: Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups. (NIH Publication No. 00-4754). Washington, DC: U.S. Government Printing Office.

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. Available online: Http://www.nichd.nih.gov/publications/nrp/smallbook.htm

Nelson, J. S., Alber, S. R., & Gordy, A. (2004). Effects of systematic error correction and repeated readings on the reading accuracy and proficiency of second graders with disabilities. *Education and Treatment of Children, 27,* 186-198.

Pearson, P. D., Johnson, D. D., Clymer, T., Indirsano, R., Venezky, R. L., & Baumann, J. F. et al. (1989). Silver, Burdett, and Ginn. Needham, MA: Silver, Burett, and Ginn, Inc.

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

Reschly, D. J., & Ysseldyke, J. E. (2002). Paradigm shift: The past is not the future. In A. Thomas & J. Grimes (Eds.), *Best Practice in School Psychology (Vol. IV, pp. 3-20).* Bethesda, MD: National Association of School Psychologists.

Rose, T. L., & Beattie, J. R. (1986). Effects of previewing on the oral reading of mainstreamed behaviorally disordered students. *Behavioral Disorders, 10,* 33-39.

Samuels, S.J. (1979). The method of repeated readings. *Reading Teacher, 32*, 403-408.

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

Shinn, M. R. (1989).Curriculum-based measurement: Assessing special children. New
York: Guilford Press.

Shinn, M.R., & Shinn, M.M. (2002). *AIMSweb training workbook: Administration and
scoring of reading curriculum-based measurement (R-CBM) for use in general
outcome measurement.* Eden Prairie, MN: Edformation, Inc.

Sindelar, P. T., Monda, L. E., & O'shea, L. J. (1990). The effects of repeated readings on
instructional and mastery level readers. *Journal of Educational Research, 83*, 220-
226.

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

Sterling-Turner, H.E., Watson, T. S., Wildmon, M., Watkins, C., & Little, E. (2001).
Investigating the relationship between training type and treatment integrity. *School
Psychology Quartely, 16,* 56-67.

Therrien, W. J. (2004). Fluency and comprehension gains as a result of repeated reading:
A meta-analysis. *Remedial and Special Education, 24,* 252-261.

U.S. Department of Education (2002). *No Child Left Behind Act of 2002.* Retrieved
January 10, 2008, from http://www.ed.gov/offices/OESE/esea/index.html

Valleley, R. J., Evans, J. H., & Allen, K. D. (2002). Parent implementation of an oral
reading intervention: A case study. *Child & Family Behavior Therapy, 24,* 39-50.

Valleley, R. J., & Shriver, M. D. (2003). An examination of the effects of repeated

readings with secondary students. *Journal of Behavioral Education, 12,* 55-76.

Weinberger, J. (1996). A longitudinal study of children's early literacy experiences at

home and later literacy development at home and school. *Journal of Research in*

Reading, 19, 14-24.

Welsch, R. G. (2007). Using experimental analysis to determine interventions for reading

fluency and recalls of students with learning disabilities. *Learning Disability*

Quarterly, 30, 115-129.

Wilber, A., & Cushman, T. P. (2006). Selecting effective academic interventions: An

example using brief experimental analysis for oral reading. *Psychology in the*

Schools, 43, 79-84.