ABSTRACT

ADDRESSING THE ORAL READING FLUENCY NEEDS OF STUDENTS USING THE BRIEF ASSESSMENT MODEL

by Jennifer Bross

The purpose of this study was to examine the effects of the brief assessment model on improving the oral reading fluency rates of three fourth grade students in Southwest Ohio. A brief assessment was conducted with each student to determine the most effective reading fluency intervention. The intervention was implemented with each student over a period of four to seven weeks. Each student showed increases in their oral reading fluency rates through the use of their “most effective” intervention strategy. Discussion of results and suggestions for future research are described.
ADDRESSING THE ORAL READING FLUENCY NEEDS OF STUDENTS USING
THE BRIEF ASSESSMENT MODEL.

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Dedication

This work is dedicated in loving memory to my mother, Barbara Oxley, and to my husband, Marty, who has helped me continue what my mother raised me to be.
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I would like to acknowledge and deeply thank my advisor, Katherine Wickstrom, for seeing and pushing me to this end five years later. Without her support in graduate school and now, I would not be the psychologist I am today.

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Introduction

In a time of “No Child Left Behind,” educators and school districts across the country face the challenge of providing each and every student with the highest quality education within an enriching and safe environment. With this mission in mind, the field of School Psychology has started to shift from a traditional assessment model of standardized tests to one that is preventative in nature in order to address student academic and behavioral issues. This shift to a “Response to Intervention” Model is founded on the goal of establishing a method that more directly assesses student performance within their academic curriculum (Gresham, 2001).

The shift to an intervention based services model has generated the widespread use and discussion of curriculum based measurement (CBM) systems. CBM can be defined as a “system for determining the instructional needs of a student based upon the student’s on-going performance within the existing course content in order to deliver instruction as effectively and efficiently as possible” (Gickling & Croskery, 1989, pp.344-345). While there are many common examples of the use of CBM in our schools at all grade levels, the use of Dynamic Indicators of Basic Skills (DIBELS) by elementary schools to directly assess students’ reading abilities in grades K-3 is an efficient means of providing curriculum based reading skill information three times per year (Good & Kaminski, 2001).

As school psychologists and educational professionals gather data (e.g., DIBELS and CBM results), questions about how to help the struggling students are generated. A potential response to these questions lies in the use of brief experimental analysis. The premise of the brief experimental analysis model is to expand the use of functional analysis to academic behaviors. In a time of “response to intervention” mandates by IDEA reauthorizations, researchers and educational practitioners have become increasingly interested in discovering efficient and reliable methods for evaluating and selecting useful interventions for children in school. The use of functional analysis via the Brief Assessment model allows student behaviors (low oral reading fluency) to be assessed using a sequence of intervention strategies. Once the student has completed the sequence, the strategy that yielded the most positive results (an increase in oral reading
fluency) is implemented with the student. School psychologists and educational personnel can go beyond traditional assessment data that provides strengths and weaknesses in reading performance to provide the team (teachers, parents, educational personnel) with an individualized intervention strategy, which yields positive results, for future implementation and subsequent progress monitoring data collection.

The purpose of this study was to use the Brief Assessment Model with three elementary students that struggled in reading. The assessment protocol identified the “most effective” strategy for each student and was followed by an extended assessment phase in order to determine the stability of the chosen intervention for improving oral reading fluency at the individual level.

The Assessment of Reading Using Curriculum-Based Measurement

School psychologists collect CBM data for the purpose of specifying and verifying problems. The use of this “direct assessment” model has been supported in a January 2001 special section of the National Association of School Psychologists Bulletin entitled “Standards Make a Difference: The Influence of Standards on Classroom Assessment.” The article suggests that “the focus of academic standards should be on rigorous classroom assessment, and the influence of that assessment process is overwhelmingly positive for the thinking, reasoning, and communications skills of students and their performance on high-stakes tests. School leaders are encouraged to promote the effectiveness and the fairness of standards-based assessments in their schools. Although there are many facets of standards-based assessments, the most important characteristic lies in the fundamental purpose of improving student achievement. Although tests have a history of being seen as merely evaluative in nature, answering the fundamental question of “How can students and schools improve their achievement?” only occurs when the assessment is designed to provide feedback that Wiggins (1998) terms “educative”: immediate, relevant, useful, and to promote student learning (Standards Bulletin).

Unlike traditional assessment techniques that test students on material disconnected from the context of the classroom, CBM uses actual curriculum goals and materials to gauge student performance. The most common use of this model employs repeated and frequent administration of skill probes taken from the child’s curriculum.
These probes can be developed for any part of the child’s curriculum and can assess skills that may not be the skill being instructed but are viewed as a “vital sign” that reflects improvement and acquisition of curriculum content (Shapiro, 1996).

Although CBM can be used in a variety of subject areas, the use of CBM with oral reading fluency is of particular interest given the increasing initiative and focus to improve children’s reading abilities in early grades. Reading fluency can be defined as the rate in which a child is able to read written text accurately. Research has shown reading fluency to be a fundamental skills that is necessary to become a proficient reader and is related to reading comprehension (Fuchs, Fuchs, & Maxwell, 1988). CBM can be used to assess a student’s reading fluency in a relatively simplistic manner through the selection of a passage of at least one hundred words from the student’s curriculum. The passage is given to the student to read orally for one minute while the examiner marks reading errors on their copy of the passage. The correct number of words per minute and the number of errors per minute is tallied for the child. This procedure can be used repeatedly as a means of monitoring the student’s progress in oral reading over a period of time and can also be used in conjunction with local norms in order to see where the child is functioning as compared with other students in their grade level. In addition to the ease of administration, CBM is sensitive to short term instructional growth and change, which allows psychologists and other educators to frequently review progress and determine if the instructional modification is of continued benefit to the student (Daly, Martens, Dool, & Hintze, 1998). Finally, assessing reading skills in a student’s curriculum allows psychologists to potentially answer two questions: (1) How much of a reading problem exists? and (2) What potential conditions in the classroom facilitate the existence of these problems (Batsche & Knoff, 1995)?

When it is determined that a reading problem exists, a next step can be to examine the student’s classroom environment to assess its’ impact on the reading problem. A common method used to examine environmental events is known as functional analysis. Functional analysis involves the manipulation of environmental events in order to provide information regarding the relationship between those events and the problem behavior (McComas, Hoch, & Mace, 2000). Functional analysis procedures have been used extensively in choosing interventions for nonacademic problems. Hypothetically,
choosing the strategy with a functional relationship to the target behavior should result in improvement whereas choosing strategies without a functional relationship should not result in any change in the targeted response. Functional analysis procedures for social behaviors (Broussard & Northup, 1995; Kern, Childs, Dunlap, Clarke, & Falk, 1994) and academic problems (Daly, Witt, Martens, & Dool, 1997) have been increasingly used in classroom environments.

Brief Experimental Analysis of Oral Reading Fluency

In order to expand the use of functional analysis to academic problems, there have been efforts to develop brief experimental analysis techniques. The goal of these techniques is to provide a method for educators to use functional analysis in their classrooms without the time constraints. In nonacademic behaviors, researchers have been successful in linking the assessment of behaviors to effective interventions by identifying the function of the behaviors (Daly, et al., 1997). For example, when it is known that adult attention maintains a problem behavior (e.g. temper-tantrums, talking-out) in a child, an intervention that has the adult provide attention only when an appropriate behavior is observed has been successful. While many behavior problems are the result of a performance deficit (the child is able to behave without having a tantrum), students’ academic problems often result from the absence of a skill or inadequate skill development (Daly et al., 1997). How then can functional analysis be applied to academic performance such as poor reading skills? The application to poor oral reading skills involves the identification of instructional methods that are affecting the academic behavior (oral reading). If the effects of instructional methods or teaching strategies are known, it is hypothesized that use of the most appropriate method will maximize student success.

In order to develop a method to link poor academic performance to effective teaching strategies; five common factors have been identified by Daly and his colleagues (1997). These factors include (a) students do not want to do work (motivation), (b) they have not spent enough time doing it (practice), (c) they have not had enough help to do it (additional help), (d) they have not had to do it that way before, or (e) the work is too hard. Research consistently supports these factors as the foundation of academic problems in children and several hypotheses of the impact on performance have been
tested and confirmed (Daly et al., 1997). With these factors in mind, this assessment model involves the brief presentation of two or more instructional strategies believed to improve performance. The presentation of these strategies is sequenced from least to most intrusive in terms of time and teacher involvement. The decision to develop a model that utilizes the least to most intrusive sequence stems from research that has found easier solutions are more likely to be implemented consistently while solutions that are more time consuming or technically difficult are less likely to be implemented correctly in the classroom (Gresham & Witt, 1997).

The most common approach to determining the sequence of strategies using functional analysis techniques is known as a multi-element design. A multi-element design typically begins with a baseline period to establish levels of the behavior in question. Then, one or two sessions are conducted under the first strategy followed by sessions that test the second, third etc. strategy until all the strategies being compared have been alternated repeatedly in a semi-random sequence (Daly et al., 1997).

Based upon the multi-element design model, a procedure for comparing the effectiveness of a series of interventions for improving students’ oral reading fluency has been developed (Daly, Martens, Dool, & Hintze, 1998). This procedure includes the following components: A reward for rapid reading (incentive condition), repeated readings (RR), listening passage preview/phrase drill (LPP/PD), and the use of reading passages that were taken from one level lower than the level the student is instructed upon (easier material; EM). The basis of this procedure stems from literature on motivational techniques, practice techniques, drill techniques, and easier materials.

Motivational techniques. In order to address a motivational problem it is first important to be sure that the student has the skills to perform but just does not want to do so. If it is determined that the student does not have the skill to perform, the problem becomes a skill deficit and potential interventions need to be geared to the production of new behaviors. This strategy is quite different from a student’s unwillingness to perform (performance deficit) because in this instance one can employ a contingency management technique. The technique of offering incentives for using the skill and providing choices of activities is consistently found in the literature (Dunlap et al., 1994; Seybert, Dunlap, & Ferro, 1996). In the area of oral reading fluency, researchers Lovitt, Eaton, Kirkwood,
and Pelander (1971) improved oral reading by offering incentives for reading faster. Other researchers (Staats & Butterfield, 1964; Staats, Minke, Finley, Wolf, & Brooks, 1964) have found offering incentives for reading to be effective in improving student’s motivation and performance.

**Practice techniques.** Researchers have consistently found that the time during which students are actively engaged in academic responding (i.e. engaged time) has a significant relationship to academic performance (Shapiro, 1996). Using interventions that increase a student’s “engaged time” by allowing the student to actively practice the skill (repeated reading) will ideally improve the student’s performance or fluency. Herman (1985) found that over a three month period, eight students displayed a significant decrease in their number of miscues when reading a passage three times.

**Drill and modeling techniques.** The use of drill techniques stems from research that stresses the need for instructional tasks and assignments to help the student practice the skill. It is hoped that the student will be able to respond correctly without needing help so the response can be applied to real-life situations. Drill is designed to strengthen already acquired behaviors (Daly & Martens, 1994). When the student reads a word incorrectly, the word is modeled correctly by the examiner and the student is then drilled on the correct pronunciation. The listening passage preview/phrase drill condition is unique because it contains acquisition, fluency, and generalization components. Research (e.g., Singh & Singh, 1984; Daly et al., 1994; Jones & Wickstrom, 2001) has shown this condition to be effective in increasing students’ oral reading fluency.

**Easier material.** Research has found that students are more apt to be accurate and generalize what they learn if they are given materials that are not too easy or too difficult. Daly, Martens, Kilmer, and Massie (1996) found that providing reading instruction at a level that was more appropriately matched to students’ skill levels resulted in greater generalization than when instruction was provided in more difficult materials. Although changing a student’s instructional materials to fit their skill level may be appropriate, it is left in this research as the last intervention possibility due to the amount of time and teacher involvement it would take to implement such a strategy.
Several studies have been conducted to determine the effectiveness of the Brief Assessment model and its’ stability over time. Daly et al. (1998) employed the Brief Assessment model to test various hypotheses regarding the oral reading performance of three regular education students. Assessment revealed that for two children, extra practice (repeated reading) produced sufficient gains in oral reading fluency. Additional help (listening passage preview) and easier materials were needed to improve the third child’s reading performance.

Daly, Martens, Hamler, Dool, and Eckert (1999) followed up this study by conducting the Brief Assessment model with four regular education students that were referred for reading difficulties. Although the students were instructed at different reading levels (first grade, second grade, and fifth grade), each student followed the same general sequence of treatment conditions: baseline, reward, repeated reading, listening passage preview/repeated readings. If performance did not improve under the listening passage preview/repeated reading condition, the condition was administered using easier materials. Results of this study revealed improvements in the reading of all four students, and further supported the notion that the Brief Assessment model has the potential of being a successful means of improving academic deficits like oral reading fluency.

In research by Noell and his colleagues (2001), brief assessments were conducted with four elementary school students who were referred for assistance with reading by their classroom teacher. The researchers used materials that assessed students’ reading skills at five levels of difficulty: Letter sounds, sight words, first-grade prose, second-grade prose, and third-grade prose. Twenty-one probes were developed at each level of difficulty. The students engaged a brief assessment that included one baseline phase and two treatment phases: contingent reward and instruction. The contingent reward phase tested whether reading fluency increased as a function of contingent access to a reward. The instruction phase used modeling and practice procedures (listening passage preview). Reward was included in the instructional procedure when rewards were beneficial in isolation. This procedure is known as stacking interventions (Daly et al., 1999). Students began the brief assessment phase with materials in their assigned grade level. The phase was repeated in successively lower level materials until the student’s mean baseline
session score was within 50% of the top of the instructional placement range (based on Fuchs & Deno, 1982). In terms of results, 10 of the 12 brief assessments identified one or both interventions as promising.

Research conducted by Jones et al. (2001) and Jones and Wickstrom (2002) also supported the findings of previous studies. Jones et al. (2001) conducted brief and extended analyses with five students enrolled in a three-week summer academic program. Each of these students was referred to the program through parent response to a newspaper article that advertised reading evaluations for children with potential reading disabilities. Each student’s assessment began with Baseline, followed by an Incentive condition, Passage Preview (Listening Passage Preview and Repeated Reading) and the Easier Material condition. Once it was determined that one of these conditions produced a 40% improvement over the baseline condition, the three treatment conditions (incentive, passage preview, easy material) were presented in random sequence during the extended analysis phase. The brief assessment was deemed unclear if replication failed or if two conditions produced similar improvement. In terms of results, the passage preview condition was found to be the most effective condition and extended analysis replicated this finding.

Jones & Wickstrom (2002) analyzed the stability and parallel effects of treatment variables identified through the use of the Brief Assessment model. Five students with reading problems were assessed using a multi-element design that used the Incentive, Repeated Reading, Learning Trials, and Easier Material conditions. Once the most effective strategy was determined for each student, an alternating treatment design was used to look at the effects of its use over time, to look at rates of word learning, and to examine the generalized effects of learning methods. Results of this study found effects of individual treatment strategies to be stable over time and effects on generalization passages were also found to exist. This supports the notion that the Brief Assessment model can produce gains in a child’s oral reading fluency that are both maintained over time and generalized to different passages.

Several researchers (Daly, Persampieri, McCurdy & Gortmaker, 2005; Duhon, Noell, Witt, Freeland, Dufrene & Gilbertson, 2005) extended the work of previous studies by using the brief experimental analysis to determine interventions that produce
positive effects using reward and instruction treatment conditions. Further, the brief assessment model was used to determine its’ effectiveness in answering the question of whether a child was exhibiting a skill or performance deficit in reading. Daly et al. (2005) used brief experimental analysis to identify reading fluency interventions for intermediate grade students (fourth and fifth grade). The students’ reading was analyzed for marked improvement using rewards, instruction, and a combination of rewards and instruction treatment packages. Results of this study showed substantial improvement in oral reading fluency for both students and further supported the notion that oral reading fluency interventions can be effectively conducted with minimal supervision (Daly et al., 2005).

In the study conducted by Duhon et al. (2005), the Brief Assessment model was used to determine if academic concerns are due to skill or performance deficits. Individual assessments were conducted to determine if the use of a reward for improvement would be sufficient enough to correct the child’s oral reading fluency deficit (Duhon et al., 2005). If the presentation of a reward for improvement was not successful in the brief assessment phase, the students were hypothesized to possess a skill deficit. Extended analyses were conducted to evaluate the link between assessment and intervention with results indicating that the Brief Assessment model is an effective means of distinguishing between performance and skill deficits in children’s oral reading fluency (Duhon et al., 2005).

In summary, several research studies have been conducted to determine if the use of the Brief Assessment model is an effective means of improving the oral reading fluency rates of students identified as having deficits by classroom teachers or parents. Results of these studies support the utility of brief assessment and offer a means by which school psychologists and other professionals can link assessment to intervention using empirically supported academic intervention methods (Daly et al., 1997) and continuous data collection over time (VanDerHeyden, Witt, & Naquin, 2003). Additional research that continues to examine the effectiveness of the brief assessment model for oral reading fluency deficits is necessary to extend the current research base and to provide potential support for the adoption of this model with schools’ current use of CBM interventions and progress monitoring programs.
Purpose of Study

There were two main purposes of this study. The first purpose was to replicate the work of Daly and others (Daly et al., 1998, Daly, 1999; Jones et al., 2001, Noell et al., 2001, Jones & Wickstrom 2002, Duhon et al., 2004, Daly et al., 2005) by asking if specific treatments on oral reading fluency will have differential effects for particular students. Each student was exposed to a predetermined order of brief instructional modifications (i.e., incentives, repeated reading, phrase drill, and easier materials) in which the effects of reading fluency were examined. Oral reading fluency was assessed using 100-word CBM reading probes in which the number of correct words per minute (CWPM) and errors per minute (EPM) was tracked.

A second purpose was to investigate the improvement of intervention effects on oral reading fluency by “stacking” interventions. In other words, does oral reading fluency increase with the use of more than one fluency strategy? This study sought to examine the use of combined strategies on oral reading fluency in order to assist students to reach their instructional reading levels.

Methodology

Participants

The participants in the study were three elementary-age students from a rural school district in southwestern Ohio. Students were referred by their teachers to participate in this project due to significant oral reading deficits. Each student’s parent or guardian was informed of the project along with the purpose in a letter. The project did not begin until the student’s parent read the information letter and gave written consent for participation (Appendices A and B).

Two of the students (Jack and Jared) were Caucasian males in the fourth grade without identified disabilities. At the time of the study, neither Jack nor Jared received assistance in reading outside of traditional reading instruction in their general education classrooms. The third participant (Emily) was a third grade Caucasian female without an identified disability who was also not receiving additional assistance in reading.
**Materials**

Reading passages were selected randomly from the student’s current curriculum (Harcourt Brace & Company, 2001). The passages contained at least 100 words and did not consist of plays, poetry, or songs. Each passage was retyped in a similar font. In order to ensure that the passages were at the identified grade level, estimates of grade-level readability were determined using the extended version of the “Readability Graph” (Fry, 1977). The Fry readability estimates provide a general grade level based on the number of sentences per 100 words and the number of syllables per 100 words.

**Dependent Measures**

This study included two dependent measures, correct words per minute (CWPM) and errors per minute (EPM). The CWPM is the number of words the child correctly read from an instructional passage in one minute (Marston, 1989). As the child read the passage aloud, the examiner followed along on a separate copy and placed a slash mark (/) through the words that were mispronounced or omitted. The child was told to “go on” if he/she paused for more than three seconds on a word and that word was marked as incorrect. The correct words per minute (CWPM) was determined by subtracting the number of errors from the total number of words attempted within the one minute time period. Errors per minute (EPM) were measured as the number of word errors within the one minute (Shapiro, 1996).

**Interrater Agreement**

In order to account for variability, an interrater agreement procedure was utilized to assess the reliability of the dependent measures. Each reading session was audio recorded and listened to by another graduate student examiner. The examiner followed along on a separate copy of the reading passage and independently determined the correct words per minute (CWPM) and the errors per minute (EPM). Interrater agreement (IOA) was calculated based on exact agreement for each student response, that is by dividing the lower estimate by the higher estimate and multiplying by 100 (House, House, & Campbell, 1981). The mean agreement coefficient for CWPM was 98% (range, 95%-100%).
Experimental Conditions

Each child’s oral reading fluency skills were examined under five experimental conditions: baseline, incentive, repeated reading, listening passage preview/phrase drill, and easier material.

Baseline. The student was asked to orally read the passage for one minute while the examiner marked the errors the student made on a duplicate copy of the passage. At the close of the one minute time allowance, the examiner determined the correct number of words per minute (CWPM) and the errors per minute (EPM) for the passage. The baseline condition continued until the baseline was stable; that is, there was no upward trend and there was less than a 20% difference between scores (Alberto & Troutman, 2003).

Incentive. Prior to reading a passage, the student was asked to select a reward as an incentive. This condition served to determine if offering a reward would improve fluency. This was the only condition that provided a type of extrinsic motivation (Daly et al., 1999). In order to receive the chosen reward, the student’s number of correct words per minute had to be at least 20% higher than the mean of their baseline scores (Noell et al., 2001). The student read the selected grade-level passage while the examiner marked the errors and timed the reading for one minute. If the student’s number of correct words was not 20% higher than the mean of their baseline scores, the student did not receive a reward. If the student’s number of correct words was higher than the mean of their baseline scores but not greater than 20%, the student received a consolation prize. The examiner had a “goody bag” that contained items that typically appeal to elementary school boys and girls. Items included decorated pencils, erasers, and stickers (Noell et al., 2001).

Repeated Reading. This condition involved asking the student to read a selected passage four times without any error corrections by the examiner. Assessment results were based upon the fourth, one-minute timed reading of the passage. The Repeated Reading condition was implemented after the Incentive condition because it required less adult involvement than other treatment strategies that included modeling and/or error correction. This condition served to isolate the effects of increased practice without error correction and increased the students’ opportunities to respond (Daly et al., 1999).


LISTENING PASSAGE PREVIEW/PHRASE DRILL. This condition involved the examiner reading the selected grade-level passage to the student at a relatively fluent rate (e.g., approximately 100 words per minute) while the student followed along with his or her finger. The student then orally read the passage without assistance while the examiner marked their errors. After this was completed, the examiner read the error words correctly to the student and had the student practice the error words in the context of a short word segment three times each. Once the errors were reviewed, the student read the passage again for one minute. The Listening Passage Preview/Phrase Drill condition served to provide an opportunity for the examiner to model fluent reading and provide error correction (Daly et al., 1999).

EASIER MATERIAL. This condition involved the student reading a passage that was one grade level lower than their other reading passages. The student read the passage for one minute. This condition was implemented under the hypothesis that the student might benefit from instruction using less difficult reading materials (Daly et al., 1999).

DESIGN

A multi-element design was utilized with a brief assessment embedded in a treatment evaluation. The assessment consisted of four strategies implemented in a brief, multi-element design. Each strategy was “tested” in a single trial and presented from least intrusive and easiest to implement to most intrusive and hardest to implement. This design was founded upon the instructional hierarchy, a behavior-analytic model that links the level of academic skill development (acquisition, fluency, generalization, adaptation) with appropriate instructional techniques (Daly & Martens, 1994). Specifically, the modeling and prompting components of the listening passage preview condition develop acquisition and the drill and reinforcement components of the phrase drill and incentive conditions facilitate fluency building. Daly et al. (1999) established a sequence of conditions that begins with a baseline phase and is followed by successive conditions that each requires more adult involvement than the prior condition. Specifically, the presentation of a reward for success in the incentive condition is first, then the supervision of the repeated reading condition is followed by the having the examiner read to the student during the listening passage preview/phrase drill condition. Finally, the
easier material condition involves using materials of a difficulty level that is different from that which is currently used in the student’s classroom (Daly et al., 1999).

The main objective of this brief, multi-element design was to provide teachers with a method that can be administered with the least amount of intrusiveness to their classroom. Once all the conditions were implemented, the data from each condition was analyzed and the most appropriate method for treatment evaluation was determined and evaluated.

*Procedures*

This research was conducted with each of the students in the same manner. Each student participated in tutoring sessions that lasted 30 minutes and occurred twice per week. The examiner of this project was a second year graduate student in School Psychology at Miami University. The examiner was trained to conduct these procedures during a graduate course in fall, 2001 by Dr. Katherine Wickstrom. The examiner engaged in a similar research project with one student for eight weeks during the fall, 2001 semester. Participants were recruited by asking teachers for students that might benefit from an oral reading fluency intervention program. All three students attended a local elementary school in a rural district in southwestern Ohio. Participation in this study was initiated upon the receipt of a signed parent consent form (Appendix B).

For all sessions, a set of directions was read to each student in order to maintain standardization (see Appendix D). The initial sessions involved the establishment of a stable baseline. During the baseline phase, the student orally read at least three passages during each session. Each passage was timed for a one-minute reading sample. The examiner calculated the number of correct words per minute for each passage. If the points were not in an upward trend and within the same range (i.e., less than 20% variability between scores), a stable baseline was established (Alberto & Troutman, 2003). A stable baseline was established in one session for Jack and Jared and three sessions for Emily. Following the establishment of a stable baseline, the brief experimental analysis of oral reading fluency was conducted. The examiner administered four conditions in the following order: Incentive, Repeated Reading, Listening Passage Preview/Phrase Drill and Easier Material. The four conditions were completed with each student in an average of two sessions.
In order to determine the “most effective” condition for each student, a series of decision rules were used. A condition or strategy was considered effective if (a) there was at least a 20% increase in CWPM over the average baseline level, and (b) the reading level was within the Instructional level according to Fuchs and Deno’s (1982) placement criteria (see Appendix E). When more than one condition met criteria for being effective, the strategy which was considered as least intrusive for classroom teachers to implement (Daly et al., 1997) was deemed as the “most effective.” The brief assessment concluded with a repetition of the chosen strategy in order to replicate the effects.

Once the most effective condition was replicated, the examiner assessed the stability of the treatment by implementing this particular condition in the next 8-9 sessions in an Extended Analysis phase. The goal was to increase student oral reading fluency to the recommended instructional level. The instructional level was defined as the material not yet mastered by a student that is not too difficult. Fuchs and Deno (1982) determined these levels based upon the grade level of the student (see Appendix E). These criteria were used in this research because it provided a suggestion of the best place in which a child should be instructed.

Procedural Integrity

The examiner had a secondary observer listen to the audiotaped sessions in order to determine the fidelity of procedures. The observer used a fidelity checklist (Appendix F) that described the necessary steps for each condition and recorded whether each step was completed during the session. The fidelity of procedures for this study had a mean of 98% and ranged from 95 to 100%.

Results

Brief Assessment

The results for the three participants are as follows. For Jack, a fourth grader, the initial effects of the repeated reading condition were replicated when it was reinstated. This replication was achieved because the second repeated reading condition (86 CWPM) was 20% above the easier material condition (49 CWPM). In addition, the repeated reading condition score was within the instructional range for a fourth grader and it was therefore determined that a “stacking” of interventions was not necessary. For Jared, the results of the brief assessment conditions were all within the same range (109-127);
therefore, a second baseline condition was implemented (72 CWPM). In order to determine the most effective condition, the least intrusive incentive condition was implemented and replicated at 94 CWPM (20% above the second baseline condition). The incentive condition score was in the instructional range for a fourth grader thus additional interventions or stacking was not necessary. Finally, for Emily, the initial effects for CWPM on the repeated reading condition as well as the listening passage preview/phrase drill condition were within the effective range. However, the listening passage preview/phrase drill condition was the only condition within Emily’s instructional range due to her excessive errors (n=16) on the repeated reading condition. The effects for the listening passage preview/phrase drill condition were replicated when it was reinstated (88 CWPM; which was 20% above the previous easier material condition 59 WCPM). Similar to the other participants, additional interventions were not necessary with Emily.

The stability of the baseline for all participants was achieved when there was no upward trend in scores and there was less than a 20% difference between scores. A stable baseline was established within three readings for Jack and Jared. However, a stable baseline for Emily took ten readings to become established. Emily’s third reading score dropped significantly from her first two reading scores and therefore additional baseline readings were conducted until three reading scores fell within the same range were generated.

Extended Analysis

In order to determine the stability of the brief assessment, an extended analysis phase was conducted with each student using the identified “most effective” strategy over a period of four to seven weeks. For Jack, the repeated reading condition was utilized and a visual analysis of his graph showed a marked improvement (an increase in CWPM) from baseline to the extended analysis phase over 5 weeks. Further, the mean of his intervention phase performance (110 CWPM) significantly differed from his average level of performance during baseline (a mean of 45 CWPM).

For Jared, the incentive condition was utilized and a visual analysis of his graph showed a marked improvement from baseline to the extended analysis phase. Further, the
mean of his intervention phase performance (106 CWPM) differed from his average level of performance during baseline (a mean of 88 CWPM).

Finally, for Emily, the listening passage preview/phrase drill condition was utilized and a visual analysis of her graph showed a marked improvement (an increase in CWPM) from baseline to the extended analysis phase. Further, the mean of her intervention phase performance (100 CWPM) differed from her average level of performance during baseline (a mean of 43 CWPM).

To further support the positive effects of the extended analysis phase in single subject research designs, the percentage of non-overlapping data (PND) can be utilized. According to Kazdin (1978), if performance during an intervention phase does not overlap with performance during the baseline phase, the effects of plotting data points over time are regarded as reliable. Research suggests if the proportion of treatment data points found above the highest baseline point falls in the 70-90 range, the treatment observations can be considered effective. Although the Extended Analysis phase cannot be considered as a true Treatment phase, examining the PND over baseline levels can provide an indication of the immediate effects of the intervention over time.

For Jack, the PND was 9/9 or 100%. For Jared, the PND was 5/8 or 62.5%, which falls in the questionable range of scores. For Emily, the PND was 8/8 or 100%. The analysis of non-overlapping data points in this study revealed two of the three students had immediate treatment effects (i.e., during the extended analysis phase) that can be regarded as very effective.

Discussion

This study was conducted with two objectives: (1) to replicate of the work of previous researchers using the Brief Assessment model and (2) to add to the research base by examining the use of “stacking” interventions to reach a child’s instructional reading level. An analysis of this study reveals a replication of previous researchers work using the brief assessment model to intervene with three students with reading deficits. Although each student benefited from different instructional conditions (incentive, repeated reading, and listening passage preview), all students had extended analysis phases with significant rates of reading increases as compared to their initial baseline phases. These findings were consistent with outcomes from previous studies that
incorporated brief and extended analysis (Daly et al., 2005; Duhon et al., 2005; Jones & Wickstrom, 2002; Jones et al., 2001; Noell et al., 2001) of oral reading fluency indicating reliable effects.

The second objective focused on increasing oral reading fluency with the use of more than one fluency strategy. For this study, the use of “stacking” interventions to reach established instructional reading levels was not accomplished as the participants achieved instructional level reading through the use of one single intervention condition. The instructional reading level for fourth grade students, all three students in this study, is 70-100 words correct per minute with <6 errors per minute (Fuchs & Deno, 1982). While each participant responded significantly to a different intervention condition, all participants’ responses fell within the 70-100 CWPM criteria with a single intervention strategy. The idea of “stacking” interventions should be considered in future studies as students with reading deficits may require a motivational intervention (incentive condition) and a practice intervention (repeated reading) to accomplish reading fluency rates that fall within their instructional range.

*Instructional Implications*

In a time of “No Child Left Behind” and “Response to Intervention,” school psychologists have the challenge of using assessment methodologies that directly assess student performance and produce data for use in academic decision making processes (e.g. response to intervention model). In order to support new legislation (e.g. “No Child Left Behind”), assessment data must continue to answer questions of referral, screening, classification, instructional planning, and progress monitoring (Salvia & Ysseldyke, 1995). The brief assessment model presented and implemented in this study offers a potential model to assist in answering those questions, especially related to oral reading fluency. The presented model provides school psychologists with a systematic means of individualizing intervention with resulting student gains.

*Limitations and Future Research*

Although the results of this study further support the stability and utility of the Brief Assessment model, several limitations should be discussed. First, in the case of Jared, all of his intervention condition scores during the brief assessment fell within the same range. This lead to the examiner returning to the Baseline condition to implement
an additional baseline passage. Once this passage was implemented, the Incentive condition was re-implemented with a resulting score that met replication criteria (20% above the baseline condition). While this score met the 20% criteria, the resulting score was lower than previous intervention condition scores. It is uncertain whether this replication was significant and a re-administration of all four intervention conditions of the brief assessment would have provided the examiner with more conclusive evidence that the Incentive condition was truly the most effective, least intrusive intervention condition. This limitation should be considered in future studies with students that perform similarly to Jared. In addition, the use of the Incentive condition with students is the least intrusive means of intervening and is used when deficits in performance are exhibited. A classroom motivational program for Jared, in addition to the Incentive interventions as part of this Brief Assessment program, may be required to yield increases in positive reading performance as measured on classroom assessments and/or high stakes testing. These limitations for Jared should be considered in future studies as students may be referred for skill intervention when they may benefit from some form of motivational program or intervention in multiple academic areas.

Second, the goal of utilizing the “stacking” of interventions in order to extend upon past research was not accomplished because the three students in this study were within the instructional range with the use of one intervention condition. The use of the Brief Assessment model with at-risk readers may require a “stacking” of intervention conditions if initial effects from the assessment remain in the frustration range. In addition, monitoring student reading using novel reading passages (versus using the intervention passage itself) may in fact indicate the need to add other interventions. Future investigations might consider a “stacking” of interventions that includes early reading skill components to further the success of the student in the Brief Assessment intervention program if the students possess deficits in decoding or other early literacy skills.

Third, the extended analysis phases were brief (i.e., 4-7 weeks) and it is uncertain whether the effects of the intervention would translate into positive effects in student performance in their actual curriculum. Students with significant reading deficits may require interventions that are maintained for multiple months or the entire school year. It
is unknown whether the brief, twice weekly intervention offered to the participants in this study was significant enough for the child to perform better on classroom reading assessments, DIBELS assessments, or high stakes testing. Bi-weekly or monthly progress monitoring of students’ oral reading fluency using novel passages is suggested for students that fall in the “intensive” range on DIBELS assessments and it is likely that these participants would require a monitoring system of some form in order to better assure the continuance of the positive effects found in this study.

    Last, each student’s progress in the extended analysis phase was graphed based on their performance on the immediate intervention condition (during incentive, repeated reading, or listening passage preview/phrase drill). In future studies, a novel, unpracticed reading passage could be used for progress monitoring during the extended analysis phase to determine if the child’s reading fluency scores are increasing. This would more appropriately assess the extent to which intervention effects are generalizing to other materials. Students’ performance on novel, unpracticed passages gives educators an estimate of their true oral reading fluency ability and can be used to gauge the effectiveness of current intervention programs.
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Appendix A

Consent

April 24, 2002

Dear Parent/Guardian,

Your child_______________________, has been selected by his/her teacher to participate in an Academic Tutoring Program through Miami University’s School Psychology Program. The program will focus on enhancing the reading skills of your child by providing individual tutoring sessions (30 minutes each, two days/week). As described on the attached Consent form, the sessions will be provided by Jennifer Oxley, a Miami University graduate student, and supervised by Dr. Katherine Wickstrom, the university trainer. All tutoring will be held at your child’s school. The information gathered on your child’s tutoring performance will be part of a research project and will be supervised by Dr. Katherine Wickstrom. We hope that the data collected during this project will generate useful information for parents and teachers in serving the needs of students with reading difficulties.

If you would like your child to participate in this tutoring program, please read and sign the attached Consent Form and return it to your child’s teacher at your earliest convenience. If you have any questions, please feel free to contact me or your child’s teacher.

Sincerely,

Jennifer Oxley, M.S.
School Psychology Program
529-5225
oxleyjl@muohio.edu
Appendix B

PARENT/GUARDIAN CONSENT FORM

**Purpose:** The purpose of this tutoring program is to determine the most effective strategies for enhancing the reading skills of your child. Over the course of 5-6 weeks, your child will be provided with individualized tutoring that is matched to his/her strengths. Tutoring will be provided by Jennifer Oxley, a graduate student in Miami University’s School Psychology Program. It is hoped that the information gathered during this tutoring program may potentially generate more useful information for parents and teachers in serving the needs of students with reading difficulties.

**Procedures:** Your child will receive four types of tutoring: (a) providing rewards for increased performance, (b) providing practice in reading, (c) providing error correction and drill, and (d) matching the curriculum to your child’s reading skills. I will carefully assess which of these is the most effective in increasing oral reading skills. All 30-minute tutoring sessions will be held at your child’s school (approximately twice a week). These sessions will be scheduled with your child’s teacher. The tutoring sessions will be audio-taped.

**Right to Privacy:** In order to maintain confidentiality, written and tape recorded information will be coded and the identity of your child will remain confidential throughout the project. Information will be maintained in a private office at Miami University. Your child’s name will not appear on any record. However, a summary report will be provided to you and your child’s teacher(s) at the end of the tutoring program.

**Participant’s Rights:** You and your child’s involvement in this research project are voluntary. You have the right to withdraw from this project at any time. Withdrawal from this project will not adversely affect you or your child in any way. If you have any questions or concerns, or would like more information about this program, please contact your child’s teacher, research examiner, Jennifer Oxley (513-529-5225), and/or the university trainer, Dr. Katherine Wickstrom (513-529-6624). If you have any questions regarding your rights as a participant in this project, you may also contact the Office for the Advancement of Scholarship and Teaching (513-529-3734 or humansubjects@muohio.edu) at Miami University.

I HAVE READ AND UNDERSTAND THE PURPOSE OF THE PROJECT, THE PROCEDURES INVOLVED, AND MY RIGHTS AS THE LEGAL GUARDIAN OF A PARTICIPANT. I AGREE TO ALLOW MY CHILD TO PARTICIPATE IN THIS PROJECT.

________________________________   _____________________
Signature        Date
________________________________Child’s Full Name (please print)
Appendix C
FIDELITY CHECKLIST

Case #:________  * = completed

Baseline  Session #: _______ Date:_________

_____ Used the instructional level passage.
_____ Gave appropriate instructions.
_____ Student read instructional passage.

CWPM:_______  EPM:_______

Incentive  Session #: _______ Date:_________

_____ Used instructional level passage.
_____ Gave appropriate instructions (stated contingency).
_____ Proper goal determined from baseline.
_____ Student selected reward choice.
_____ Student read instructional passage.

CWPM:_______  EPM:_______

_____ Reward provided if earned; reward not provided if not earned. Reward:________

Repeated Reading  Session #: _______ Date:_________

_____ Used instructional level passage.
_____ Gave appropriate instructions.
_____ Student read instructional passage 3 times with no examiner corrections.
_____ Student read instructional passage.

CWPM:_______  EPM:_______

Listening Passage Preview/Phase Drill  Session #: _______ Date:_________

_____ Used instructional level passage.
_____ Gave appropriate instructions.
_____ Examiner read passage once @ 90 words per minute.
_____ Student read passage aloud; examiner highlighted errors.
_____ Examiner read 15 errors correctly to student.
_____ Student read phrases containing 15 error words three times.
_____ Student read instructional passage.

CWPM:_______  EPM:_______

Easier Material  Session #: _______ Date:_________

_____ Used lower level passage.
_____ Gave appropriate instructions.
_____ Student read lower level instructional passage.

CWPM:_______  EPM:_______
Appendix D

Directions for Oral Reading Fluency

Baseline

Oral Reading Fluency Instructions (for all conditions)

“Place your finger here (point to the first word). When I say ‘go’ begin reading out loud as many words as you can until I say ‘stop.’ If you get to a word you don’t know, skip it and go on to the next one. Ready? Go.”

Examiner: Follow along and time student reading passage for 1 minute.
- Mark all errors (mispronunciations, substitutions, and omissions).
- If student struggles with a word for 3 seconds, tell him/her to “Skip it.”
- If student skips a line, quickly redirect student to that line and count as one error.
- Mark a / after one minute.

Incentive

Check previous baseline (median) or incentive condition and use chart to determine goal. “This time you will have a chance to earn a reward if you read better than usual. The goal this time is to read ____ words. If you do, you will get whatever reward you choose. What reward would you like to work for today?”

If student achieves goal, give selected reward immediately. If student exceeds past baseline (median) or incentive performance but not goal, give a different reward. If student does neither, provide encouragement.

Repeated Reading

“I would like you to read this story aloud three times for practice and once for real.” I will listen while you read.”

If child asks you for correction at any time, tell them “Do the best you can.”

Before fourth reading, carefully give oral reading directions. Time and mark errors on the fourth reading.

Listening Passage Preview/Phrase Drill

“Please listen while I read this story. Follow along with your finger.”

After reading once, tell student:

“This time I want you to read the story aloud while I listen.”

Follow along and highlight errors.
Read error words correctly to student.
“Please practice the hard words three times each.”
Point to a short phrase containing errors while the child reads each three times. Assist with words if needed. After 15 words, follow oral reading directions and have the student read the passage again.

Easier Material

“This time I would like you to read an easier story.”

Proceed with oral reading directions.
## Appendix E

### Revised Placement Criteria for Direct Reading Assessment

<table>
<thead>
<tr>
<th>Grade level of Materials</th>
<th>Level</th>
<th>Words correct per minute</th>
<th>Errors per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Frustration</td>
<td>&lt;40</td>
<td>&gt;4</td>
</tr>
<tr>
<td></td>
<td>Instructional</td>
<td>40-60</td>
<td>4 or less</td>
</tr>
<tr>
<td></td>
<td>Mastery</td>
<td>&gt;60</td>
<td>4 or less</td>
</tr>
<tr>
<td>3-6</td>
<td>Frustration</td>
<td>&lt;70</td>
<td>&gt;6</td>
</tr>
<tr>
<td></td>
<td>Instructional</td>
<td>70-100</td>
<td>6 or less</td>
</tr>
<tr>
<td></td>
<td>Mastery</td>
<td>&gt;100</td>
<td>6 or less</td>
</tr>
</tbody>
</table>

Figure 1. Results of Jared’s Brief Assessment and Extended Analysis Phases.
Figure 2: Results of Jack’s Brief Assessment and Extended Analysis Phases
Figure 3: Results of Emily’s Brief Assessment and Extended Analysis Phases