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ABSTRACT

THE EFFECT OF REPEATED READING WITH PAIRS OF STUDENTS  
IN A LARGE-GROUP SETTING ON FLUENCY AND  
COMPREHENSION FOR STUDENTS AT RISK  
FOR READING FAILURE

by

John N. Frame

Chair: Shirley A. Freed

ABSTRACT OF GRADUATE STUDENT RESEARCH

Dissertation

Andrews University

School of Education

Title: THE EFFECT OF REPEATED READING WITH PAIRS OF STUDENTS IN A  
LARGE-GROUP SETTING ON FLUENCY AND COMPREHENSION FOR  
STUDENTS AT RISK FOR READING FAILURE

Name of researcher: John N. Frame

Name and degree of faculty chair: Shirley A. Freed, Ph.D.

Date completed: June 2011

Problem

Some students are failing to develop acceptable reading skills; however, instructional time allocated to reading fluency can increase reading comprehension. The purpose of this study was to compare students who received repeated reading with pairs of students in a large-group setting with those who did not in terms of reading fluency, rates of reading fluency growth, and reading comprehension for students at risk for reading failure in a school in a Midwestern mid-sized city.

## Method

An experimental pretest-posttest with control group design was used with grade level stratified (2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> grade) intervention ( $N = 27$ ) and control ( $N = 30$ ) groups. All students were at risk for reading failure based on Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF). Socioeconomic data indicated 82% of the school's students were eligible for the federal free or reduced-price lunch program. The students were homogenously paired and engaged in repeated reading in a large group using fiction and nonfiction stories at their instructional level. The study consisted of 32 sessions, 15 minutes per day, 3 to 4 days per week, over 7 weeks. The three dependent variables were pre- and posttest performance on the DORF, DORF progressing monitoring slope, and the Group Reading Assessment and Diagnostic Evaluation (GRADE).

## Results

The ANCOVA result for DORF was nonsignificant,  $F(1, 54) = .40, p = .529$ , partial  $\eta^2 = .01$ . The omnibus test of the 2 x 3 ANCOVA for DORF progress monitoring slope was nonsignificant,  $F(2, 47) = 2.49, p = .094$ , partial  $\eta^2 = .10$ , indicating no significant interaction between the treatment condition and grade level. There was no significant main effect for grade level,  $F(2, 47) = .294, p = .746$ , partial  $\eta^2 = .01$ , but a significant main effect for condition was found,  $F(1, 47) = 7.80, p = .008$ , partial  $\eta^2 = .14$ , Cohen's  $d = 0.72$ . Students in the intervention group had a statistically significant steeper slope for rates of reading fluency growth, along with a medium to large effect size. The ANCOVA for GRADE was nonsignificant,  $F(1, 52) = 3.34, p = .074$ , partial  $\eta^2 = .06$ .

## Conclusions

The theory of automaticity as applied to reading development was supported by the results. Repeated reading with pairs of students in a large-group setting was an effective intervention for rates of reading fluency growth (slope) for students at risk for reading failure; however, significant results were not found on pre- and posttests for fluency and comprehension. The short length of the study and sensitivity of the comprehension measure may not have allowed sufficient opportunity to detect changes in difference between the groups in these areas. This study demonstrated that one adult was able to facilitate the development of reading fluency with a classroom of students who were below standard.

Andrews University

School of Education

THE EFFECT OF REPEATED READING WITH PAIRS OF STUDENTS  
IN A LARGE-GROUP SETTING ON FLUENCY AND  
COMPREHENSION FOR STUDENTS AT RISK  
FOR READING FAILURE

A Dissertation

Presented in Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Philosophy

by

John N. Frame

June 2011

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Date approved

To Stephanie, without you my vision could not have been realized. Your dedication to our family is a great comfort. I look forward to what God has next for our relationship.

To Madison, who matured into a beautiful young woman during this process.

To Coby, who is created in my image, only better.

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## CHAPTER 1

### INTRODUCTION

#### **Background of the Problem**

Failure to read on grade level, especially among minorities and those at or below the poverty level, has been frequently documented. The National Center for Educational Statistics (Perie, Grigg, & Donahue, 2005) found that fourth-grade students from around the country frequently read below desirable levels. The report indicated that 36% read below the basic level, defined as “partial mastery of the knowledge and skills that are fundamental for proficient work at a given grade” (p. 2). This percentage is improved slightly from 1992 when 38% read below the basic level. However, another study indicated that students in the fourth grade in the United States were found to be performing acceptably in reading compared to students from other countries, except for those living in poverty (Ogle et al., 2003). More specifically, 54% of students eligible for free or reduced-price school lunch score below the basic level compared to 23% who were not eligible (Perie et al., 2005). Students living in poverty are at risk of arriving at school with a lack of sufficient academic prior knowledge (Snow, Burns, & Griffin, 1998). This lack of prior knowledge contributes to a slow start in reading development, a start from which many fail to recover (Juel, 1988; Stanovich, 1986).

Poor reading achievement can lead to school failure and subsequent economic disadvantage, perhaps one cause of the perpetuation of an underclass. Snow et al. (1998)



indicated that "reading is essential to success in our society. The ability to read is highly valued and important for social and economic advancement" (p. 17). The good news is that there are solutions to this complex problem. Reading problems are preventable in a majority of cases and can be reliably detected as early as kindergarten (Good, Kaminski, & Dill, 2002) and first grade (Hintze & Silbergitt, 2005).

Understanding reading fluency's connection to reading comprehension is important as we seek to prevent reading failure. Reading fluency is highly correlated with reading comprehension. Hosp and Fuchs (2005) found correlations for reading fluency with reading comprehension to range from .79 to .84 for a group of first- through fourth-grade students. The same group had correlations between fluency and the total reading score ranging from .83 to .91. Reading fluency has also been found to be highly correlated with, and predictive of, scores on state high-stakes achievement tests (Ax & Bradley-Klug, 2005; Good, Simmons, Kame'enui, Kaminski, & Wallin, 2002; Sibley, Biber, & Hesch, 2001; Stage & Jacobsen, 2001; Wood, 2006).

Although closely linked to comprehension, very little attention has been paid to reading fluency instruction in the classroom setting, which the National Reading Panel (NRP; NICHD, 2000a) called "unfortunate" (p. 11) and to which Allington (1983) referred to as "the neglected reading goal" (p. 556). Teaching methods for reading fluency do exist and have been researched. Repeated reading is the most used method of developing reading fluency (Meyer & Felton, 1999; Samuels, 1997) and is connected to respected theory (LaBerge & Samuels, 1974; Samuels, 1994).

Previous research has led to the development of a critical knowledge base in reading. It has been discovered that reading fluency is highly correlated with reading

comprehension in general (Hosp & Fuchs, 2005) and with student performance on high-stakes accountability tests (Ax & Bradley-Klug, 2005; Good, Simmons, et al., 2002; Sibley et al., 2001; Stage & Jacobsen, 2001; Wood, 2006) in particular. It has also been shown that repeated reading can increase reading fluency rates both in the text being repeatedly read and in new reading material (Therrien, 2004). Repeated reading has been found to be effective in small groups (Begeny & Martens, 2006; Begeny & Silber, 2006; Homan, Klesius, & Hite, 1993; Strong, Wehby, Falk, & Lane, 2004) and one-to-one teaching situations (Ardoin, McCall, & Klubnik, 2007; Begeny, Daly, & Valleley, 2006; Chafouleas, Martens, Dobson, Weinstein, & Gardner, 2004; Nanda & Fredrick, 2007; Nelson, Alber, & Gordy, 2004; Sindelar, Monda, & O'Shea, 1990; Therrien, Wickstrom, & Jones, 2006; Valleley & Shriver, 2003). Reading fluency instruction is effective for students across grade (Homan et al., 1993; Marr & Dugan, 2007; Therrien, Wickstrom, et al., 2006) and impairment status lines (Therrien, 2004). Although reading fluency instruction can reverse reading failure, it is all too often unrecognized or overlooked by classroom teachers.

### **Statement of the Problem**

Some students are failing to develop acceptable reading skills based on assessment results at the local, state, and national level, yet simply spending instructional time on reading fluency development can increase reading comprehension. Reading fluency is a neglected area of reading instruction; however, research indicates that explicit instruction in reading fluency leads to improved word recognition, reading fluency, and reading comprehension (NICHD, 2000b). Instruction in repeated reading is one method that has been shown to increase reading fluency. Many studies have used

repeated reading in either a one-on-one or small-group instructional setting, but fewer have used repeated reading in a classroom setting. Mathes and Fuchs (1993) used repeated reading in a resource room setting (four to six students present) pairing disabled students. Peer-Assisted Learning Strategies (PALS; D. Fuchs, Fuchs, & Burish, 2000) uses repeated reading, pairing a high performing student with a lower performing student, as part of a larger instructional package for an entire classroom. Yurick, Robinson, Cartledge, Lo, and Evans (2006) used repeated reading in a classroom of 18 students and two adults, and Musti-Rao, Hawkins, and Barkley (2009) trained one teacher to manage repeated reading in her classroom of 32 students; however, data were collected for only eight and 12 students, respectively. Both of these studies employed the multiple baseline across participants design. Studies using the experimental design for a large group of at-risk students, such as the number found in a typical classroom, were not found. Previous work suggests that classroom teachers can develop their students' reading fluency and subsequently increase group achievement scores at the cost of about 15 minutes per day in a structure that can be implemented without undue burden.

### **Purpose of the Study**

The purpose of this study was to compare students who receive repeated reading with pairs of students in a large-group setting with those who do not in terms of reading fluency, rates of reading fluency growth, and reading comprehension for students at risk for reading failure in a Midwestern mid-sized city.

### **Research Questions**

The core questions of this study are:

1. How do the reading fluency skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading fluency, after adjustment for beginning fluency?

2. How do rates of reading fluency growth for students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of growth in reading fluency, after adjustment for beginning fluency?

3. How do the reading comprehension skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading comprehension, after adjustment for beginning comprehension?

### **Rationale**

School leaders need as many strategies as possible to deal with the ever-increasing push for accountability through high-stakes testing mandated by the federal government. Unacceptably low reading skills by minority American students, those living in an urban setting, and those subject to the impact of poverty must be addressed for the benefit of society in general. This will require strong leadership from those with the vision to effectively tackle this problem. A thorough understanding of the research surrounding reading development and how to correct common learning difficulties will be necessary to supply appropriate action to the vision. Examining repeated reading's impact on reading fluency and reading comprehension in a setting that can be easily translated into most classrooms provided an opportunity for me to develop my leadership capacity as an effective teacher, dynamic change agent, effective organizer, collaborative consultant, reflective researcher, and scholar.

## **Theoretical Framework**

Learning theory has guided the development of this study. Vygotsky's (1978) concept of the zone of proximal development has influenced the idea of instructional level in reading. Students in this study were provided reading materials that were within their instructional level. Engelmann's theory of direct and explicit instruction (Engelmann & Carnine, 1991) has also had influence on the development of this study. Reading fluency must be explicitly taught to students, especially students who are lagging behind their grade level peers in reading development. The stages of progression of reading development found within the National Reading Panel's (NICHD, 2000a) report are a third guiding influence in the development of this present research. The panel's understanding of the importance and place of reading fluency has directly influenced this research. The theory of automatic information processing for reading from LaBerge and Samuels (1974; Samuels, 1987, 1994) and the follow-up work in repeated reading (Samuels, 1979, 1997) has significantly impacted the work in reading fluency in general and this study in particular.

The features of self-monitoring, progress monitoring, and repeated reading with pairs of students implemented in the study are motivational techniques with the purpose of teaching individuals to become self-managers of learning and cooperation with others (Archer, Gleason, & Vachon, 2003; Samuels, 1979, 1997). One goal of education is to develop cooperating members of the community; therefore, it is critical that students be provided with healthy examples of cooperation, interdependence, and independence in the classroom.

## **Significance of the Study**

This study is significant because it is useful to know if repeated reading can be managed in a teacher-friendly large-group instructional situation and produce significant and practical results on measures of reading fluency and group achievement tests of comprehension with students at risk for reading failure. This study took the well-documented success of repeated reading and recreated the strategy in a large-group instructional situation that provided instructional attention on the often overlooked essential component of reading instruction, reading fluency. This was done in a way that maximized student academic engaged time and minimized teacher instructional preparation and efforts in managing time and resources. There have been studies of instruction using group-based integrated fluency packages, but none that have paired low performing readers using only repeated reading in a large-group setting in an experimental design. This method, if found to be effective, would be an efficient way to deliver high-powered instruction to large numbers of students who are at risk for reading failure.

## **Definition of Terms**

### **Benchmark**

A benchmark is a standard from which to judge performance. Benchmark for this study is the reading rate standard dependent on the student's grade level which is predictive of future reading success. The Dynamic Indicators of Basic Early Literacy Skills (DIBELS) standards were chosen for this study (Good, Simmons, & Kame'enui, 2001).

## Curriculum-based Measurement (CBM)

CBM is a measurement strategy designed to provide a quick and reliable indication of a student's general academic health. The measures are designed to assess a student's facility in basic academic skills. Oral reading fluency, as measured by correct words per minute (CWPM), is an example of CBM that was used in this study. CBM has been thoroughly researched (Deno, Fuchs, Marston, & Shin, 2001; Wayman, Wallace, Wiley, Tichá, & Espin, 2007), found to be highly reliable for many groups of students, and found to be valid for making decisions about student academic growth (Fewster & Macmillan, 2002; Marston & Magnusson, 1985).

## Instructional Level

Instructional level refers to the use of learning materials that are at an appropriate level of challenge for the individual learner, neither too easy nor too difficult. Instructional level is defined as reading accuracy in the range of 93% to 97% correct (Gickling & Armstrong, 1978; Treptow, Burns, & McComas, 2007), while orally reading connected text. The independent level is considered to be reading accuracy of greater than 97%, while a student is reading at the frustration level if he is 90% or less accurate.

## Large-group Setting

Repeated reading in the reading research literature has typically been used as a teaching strategy employing one adult and one student. More recent studies have used small groups of two to six students. Large-group setting, in this study, refers to the structure of employing one adult and 27 students while using the repeated reading method.

## Reading Fluency

Fluency is the ability to demonstrate a skill with mastery. The National Reading Panel defined reading fluency as "the ability to read a text quickly, accurately, and with proper expression" (NICHD, 2000b, p. 3-5). Samuels (2007) said, "It is the simultaneity of decoding and comprehension that is the essential characteristic of reading fluency" (p. 564). Reading fluency for this study is the ability to orally read connected text with speed and accuracy, objectively defined as correct words per minute (CWPM).

## Repeated Reading

Repeated reading is rereading a familiar passage until an acceptable level of fluency is reached (Samuels, 1979, 1997). Samuels (1979, 1997) noted that 17<sup>th</sup>-century literacy instruction used books containing stories familiar to the students, but which they could not yet read. Repeated reading of these familiar texts allowed the students to develop reading skills and fluency. Operationally defined for this study, repeated reading is the act of rereading a selected text a minimum of three times. A fourth reading was completed if a time and error criterion based on current reading performance was not attained during the first three readings.

## Repeated Reading With Pairs of Students

Repeated reading with pairs of students is the instructional management procedure of two students at a similar instructional level taking turns reading aloud while the other student times the reading and counts reading errors. The listening member of the pair provides feedback to the reader by recording the time required to read the passage and pointing out the errors.



## Student at Risk for Reading Failure

A student is at risk for reading failure in this study if he scored below the DIBELS benchmark for correct words per minute (CWPM).

### **Assumptions**

It is assumed that the level of difficulty for each book with the same designated reading level is similar across the selections that will be available for the students to read.

The foundational reading skills of phonemic awareness and phonics are assumed to be in place by the time that students reach the second grade; therefore, the students selected for this study were likely to be at the stage where fluency is a major instructional need.

It was assumed that the improvement in oral reading during the repeated reading intervention transferred to the silent reading used during the reading comprehension posttest.

### **General Method**

An experimental pretest-posttest with control group design was used in an attempt to provide more conclusive evidence that repeated reading alone within a large-group setting used for only a brief portion of the day could produce significant impact on measures of reading fluency and reading comprehension. The intervention and control groups were randomly selected from the subset of students of the population of an elementary school who failed to reach the DIBELS reading fluency standard. The study took place in a school in a Midwestern mid-sized city with 60% of the population being ethnic minorities and 65% eligible for free or reduced-price lunch. Differences between groups in reading fluency, rates of reading fluency growth, and reading comprehension

were examined following a period of repeated reading with pairs of students in a large-group setting.

### **Limitations**

Some limitations exist for this study. The historical transience rate for the building has been 13-15%. Part of the difficulty in reaching an urban population living in poverty is that students move into and out of school boundaries frequently. A 10% attrition rate occurred during this study, consisting of two students who moved and a third who elected to discontinue participation. The remaining students provided a sample size that was appropriate for the experimental design employed by this study.

This study was relatively short compared to the existent literature. This study attained an average attendance per student of 28 sessions, whereas Therrien's (2004) meta-analysis found a mean of 36 sessions. This may have limited the power of the results.

The reliability and validity of this study could be questioned. Treatment fidelity was not formally checked during the study, although some supportive data were collected. In addition, I was the only one involved in the organization and presentation of the treatment.

### **Delimitations**

The students at risk for reading failure who were selected for this study were in the second through fourth grade in order to reflect the diversity in reading level that can occur within a single classroom.

The routine and procedures implemented were designed to enable the students to become self-managers of their own learning and allow time for the adult to monitor progress and make informed and reflective instructional decisions.

The stories used for the repeated reading were from the Reading A to Z (2009) series. The series was available to the school and was adapted for use in this study. The type of stories used for repeated reading included both fiction and nonfiction.

The dependent variables that were chosen reflect data that are highly predictive of future reading success (oral reading fluency) and which are familiar to consumers of the research findings (a standardized group administered measure of reading comprehension).

The building chosen in which to conduct the study is the one in which I had been assigned to for several years. I was familiar with the staff and resources available to support the research project.

### **Summary**

In sum, the study is unique and adds to the research literature and knowledge base by using existing theory and knowledge as a starting point for increasing reading comprehension in struggling readers through a number of measures: (a) by ensuring instructional level match with the reading materials, (b) delivering systematic and explicit instruction; (c) paying attention to fluency's importance in the reading developmental process; (d) creating a setting where the instructor functions as a general manager and the students are directly involved in managing their own learning; (e) using structures and routines that will encourage high levels of academic engaged time with little extra effort from the instructor; (f) using the motivational components of self-monitoring, frequent

progress monitoring, and repeated reading with pairs of students; (g) implementing a four times per week treatment that lasted only 15 to 20 minutes; (h) instructing a classroom of 25 or more students in a large-group setting; (i) creating a system that can be easily replicated in most classrooms; (j) conducting a study designed in a way that attempts to develop face validity for educators by linking reading fluency with performance on a group measure of reading comprehension; (k) and using an experimental design with a control group composed of members who also scored below reading fluency benchmark.

### **Organization of the Study**

The study is organized in the following manner. Chapter 2 contains a thorough review of the relevant literature pertaining to foundational theory, reading fluency, reading fluency's connection to comprehension, and repeated reading. Chapter 3 discusses the methodology and procedures used to carry out the treatment. Chapter 4 contains a summary and analysis of the results. Finally, chapter 5 reviews the findings and discusses them in the context of our current knowledge and need for future research.

## CHAPTER 2

### LITERATURE REVIEW

#### **Introduction**

Increasing the awareness of the importance of reading fluency may be a critical step toward improving the academic outcomes of many students in the United States of America. Failure in learning to read on grade level is all too common in America. There have been attempts from government and academia to resolve the issue with varying degrees of success. The research surrounding reading fluency's connection to general reading success has been hopeful for this situation. The link between repeated reading, reading fluency, reading comprehension, and successful performance on group tests of reading achievement appears on the surface to seasoned teachers as strange and untenable. Yet it has been thoroughly documented and is logically obvious to many researchers (Therrien, 2004). An examination of the literature is necessary to provide context for this issue and why repeated reading may have an impact on achievement test scores. This chapter offers a review of the relevant literature pertaining to these issues. Topics that will be reviewed include government's attempt to ameliorate reading failure, the theory of automaticity, alternative explanations for repeated reading's effectiveness, details surrounding reading fluency, and a thorough description of repeated reading.

## **Government-Sponsored Attempts to Address Reading Failure**

The federal government has made several attempts to address the poor reading performance of students in America. Legislation such as The Elementary and Secondary Education Act (ESEA, 1965), the most recent revision known as No Child Left Behind (NCLB, 2002), and the Individuals with Disabilities Education Improvement Act (IDEA, 2004) are attempts to increase the accountability of public schools in educating our young citizens. The latter act deals with general accountability for learning for students who are identified with a disability. It does require, however, that students who are being considered for eligibility as having a reading disability first to have been exposed to scientifically based reading instruction. The former act requires accountability in the growth of underprivileged students, with specific requirements for the instruction of reading.

The National Reading Panel (NRP; National Institute of Child Health and Human Development [NICHD], 2000a), charged by Congress with its duties, argued from the evidence that there are five essential components to effective reading instruction. Each component is not a gate to be passed through before the next component can be effectively addressed; however, some of the components are foundational, others are intermediary, and still others are what pass for the popular definition of reading. Two areas in the panel's findings that are foundational to literacy development are phonemic awareness, the ability to understand that words are made up of individual sounds or phonemes, and phonics, the ability to connect sounds in words with the letters that represent them. Both phonemic awareness and phonics are essential skills for reading

competence that, according to the NRP, must be explicitly instructed to make reading comprehension accessible.

Vocabulary development and reading comprehension connect with the more popular notions of what constitutes the construct of reading. Students must have vocabulary knowledge in order to make sense of words that they read orally. Reading comprehension is the act of deriving meaning from text, effortlessly pulling all the aspects of reading together in order to understand the message behind the written word.

Reading fluency can be conceptualized as the connecting path between the foundational components and the popular understanding of what reading is. Basic reading skills must become automatic if comprehension is to be easily accessed (LaBerge & Samuels, 1974; Samuels, 1994). Reading fluency, the ability to read accurately at an appropriate rate (Samuels, 1979, 1997), is the intermediary skill that is vitally linked to reading comprehension (Burns et al., 2002; Hosp & Fuchs, 2005).

The government has attempted to lead toward better instructional practices in reading through legislation; however, the results have been questionable. Part of the difficulty may be a lack of awareness of the research base in effective reading instruction among teachers. Inclusion in NCLB of the NRP's Big Five codified the essential components of reading instruction; however, these practices are not finding a solid place in local practice. Especially overlooked is the component of reading fluency, not only in instruction (Allington, 1983; NICHD, 2000b), but also by test makers, teachers, and researchers who assess general reading competence (L. S. Fuchs, Fuchs, Hosp, & Jenkins, 2001). Fluency is highly correlated with comprehension (Marston, 1989) and performance on group tests of achievement (L. S. Fuchs, Fuchs, & Maxwell, 1988;

Shinn, Good, Knutson, Tilly, & Collins, 1992). Fluency can be explicitly taught, especially by following the repeated reading method.

### **Theory of Automaticity**

It is crucial to begin any discussion by laying the foundation or belief system that guides your behavior or practice. Reading fluency, and subsequently the choice of repeated reading as an instructional technique to improve dysfluency, rests in the theory of automatic information processing in reading (automaticity), originally postulated by LaBerge and Samuels (1974; Samuels, 1987, 1994; Stanovich, 1987) as an explanation for poor reading skills, and addressed with repeated reading as a correction (Samuels, 1979, 1997). Their work was influenced by contemporary research in information processing and by historical work in the late 19<sup>th</sup>- and early 20<sup>th</sup>-century experimental psychology literature (Wolf & Katzir-Cohen, 2001). The theory suggests that automatic and effortless reading rate, or fluency, is achieved through sufficient practice. Fluency at the level of reading connected text implies the achievement of fluency for subskills in the reading process, such as phonemic awareness and phonics. This effortless processing then allows for the reallocation of attention to higher order thinking and comprehension of the reading material. The student is no longer expending energy on decoding unknown words or attempting to identify single words in a word-by-word fashion. This energy is redirected toward and expended on deriving meaning from print and reading comprehension, the mark of reading competence. The theory of automaticity thus offers an explanation to the connection between reading fluency and reading comprehension.

Perfetti (1985) put forth a similar theory for the explanation of differences between individuals in reading comprehension, known as verbal efficiency theory.



Perfetti sought to explain how the intellectual processes involved in efficient reading work together to allow the individual to focus energy on comprehension. Although LaBerge and Samuels (1974) focused on word recognition efficiency, Perfetti (1985) included other reading subcomponents, such as inferencing, within his verbal efficiency model. Perfetti's theory and LaBerge and Samuels's explanation provide a firm foundation or theoretical basis for the use of repeated reading to increase reading fluency and subsequently reading comprehension. Both models suggest that when the subskills of reading are functioning automatically, attentional resources are freed to focus on thinking and comprehension tasks.

Other important theories explaining the connection between reading fluency and reading comprehension also exist. Wolf and Katzir-Cohen (2001) illustrated Carver's use of reading theory (Carver, 1997) and Adams's (1990) connectionist model as theory for reading fluency's importance to comprehension. These models, and Wolf and Katzir-Cohen's (2001) own model (a developmental and component-based definition of fluency), are more complex explanations of the role of fluency in comprehension. The theory of automaticity's simplicity compared to these other models lends itself as an appropriate explanation as to why the equally simple instructional method of repeated reading has been so effective.

The theory of automaticity also lends itself to metaphorical illustration which explains the connection between reading fluency and comprehension and why reading fluency is a general measure of reading competence (L. S. Fuchs et al., 2001). The theory of automaticity compares reading development to the development of athletic skill. It is critical for athletes, or anyone who is attempting to learn a new skill of any

type, to first achieve accuracy in the new skill set. Once accuracy is achieved, the skill needs to be continually practiced to develop the rate necessary for its optimal execution. Once accuracy is achieved and the necessary rate is obtained, the athletic skill has reached a level of automaticity. The athlete no longer needs to concentrate on the subskills involved in the complete motor movement required to perform. The athlete unconsciously begins the motor sequence and successfully completes it without spending energy focusing on these necessary subskills.

An accomplished baseball batter stepping into the box does not consciously think about the sequence of steps involved in a successful swing of the bat. He does not consciously consider how to grip the bat or how he should properly hold his hands. He does not prompt himself to shift his weight from the front foot to the rear foot and back again in anticipation of the simultaneous opening of the hips toward the pitcher and wrist movements in bringing the bat forward to contact the baseball. The batter also does not prompt himself to follow through on the swing and finish. The mature batter simply steps into the box and the rest is automatic. His swing is fluent and is an indicator of general batting competence when the various statistics, including batting average, are examined in the morning newspaper.

It is important to note, however, that this mature batter did not achieve automaticity or fluency overnight. It required disciplined practice in first achieving the accuracy of the subskills in the swing and the repetitions necessary for the development of rate. And just as some batters have more natural ability or inclination than others, some readers will require more careful instruction and supervised practice in order to

achieve an acceptable amount of reading fluency, which indicates general reading competence, than others.

### **Isolated Word Practice**

Some researchers following LaBerge and Samuels's (1974) work wondered if there were subskills in the reading process which were more important to reading comprehension than oral reading fluency. Fleisher and Jenkins (1978, 1983; Fleisher, Jenkins, & Pany, 1979; Jenkins, Larson, & Fleisher, 1983) conducted a line of research with learning disabled and elementary school students with poor reading skills that investigated the impact of decontextualized word practice on reading comprehension. They found that practicing words in isolation with the goal of increasing decoding speed did indeed increase decoding speed; however, it did not have a significant impact on increasing reading comprehension. This type of instruction did not have an impact on reading rate, error rate, or percentage of words read correctly on a group of first-grade boys with learning disabilities (Fleisher & Jenkins, 1978). Investigation with drill-error correction also revealed an increase in word recognition, but it too failed to impact reading comprehension for fourth- and fifth-graders with learning disabilities (Fleisher & Jenkins, 1983). One study with third- through seventh-grade boys with learning disabilities in a summer reading program did show an increase in reading comprehension; however, the authors felt the results were limited due to the way comprehension was measured (Jenkins et al., 1983). These researchers concluded that if decoding fluency is indeed related to reading comprehension, the relationship is necessary but insufficient for increasing reading comprehension (Fleisher et al., 1979). The authors pointed toward reading fluency as a more promising solution.

## **Prosody**

Schreiber (1980) offered an alternative explanation for repeated reading's influence over the development of reading fluency, and subsequently reading comprehension. Schreiber wrote that it is the discovering of the underlying syntactic structure of the connected text, not the achievement of automatic information processing, which repeated reading provides to the novice reader. The reader uses the repetitions during the repeated reading to make iterative observations about the syntactic structure of the text in order to more appropriately derive the intended meaning of the author. The reason that immature readers need this extended observation of the text is because written language does not contain the complete richness of meaning that oral language possesses.

Reading is the process of translation of the written code of an oral language; however, this translation during reading misses some significant pieces of meaning, especially for novice readers. Oral language has semantic, syntactic, and prosodic components that combine to convey the speaker's meaning. The words spoken carry meaning, the semantic component. In addition, oral language has syntactic structures that help to convey meaning beyond the individual words that are used. There are rules, the syntax, for the way oral language is sequenced. The way in which the speaker sequences his words and phrases gives meaning beyond the meaning of the individual words. Prosody, the intonation, rhythm, and expression in speech, also contributes to the speaker's meaning. The same words spoken, even in the same order, can carry differing meaning based on the chosen prosody. Prosody is the element of meaning that is lost during this translation process because it is not directly observable to the reader. There are no visual markings, outside of punctuation, that signify the author's prosody.

Repeated reading has the potential to help the inexperienced reader to learn how to compensate for this loss of information.

Schreiber (1980) offered the explanation that repeated reading works to increase fluency and comprehension because it provides a way for the reader to derive as much meaning as possible from the information that is present in the stark text. The repeated reading does not directly reveal the prosody of oral language, but provides the novice reader with more opportunity to glean as much information as possible from the text in order to discern what the author's intended meaning is. The reader cannot "see" in the connected text the prosodic cues that are present in oral language. The reader, assuming his oral vocabulary is sufficient and he can use the code system as a tool, can "hear" the semantics of the words and analyze the syntactic structure of the sentence in order to derive as much intended meaning as possible as he "reads." Repeated reading helps the inexperienced reader to get by without the full benefit of the prosodic data that are present in speech. The reader becomes able to more accurately predict the prosodic elements in the text as he matures, adding even more information regarding the author's intended meaning, as his skills as a reader develop. It is through this process that Schreiber believes that at least part of the explanation for repeated reading's influence over fluency and comprehension is found.

How does current research illuminate the potentially competing theories as to why repeated reading enables reading fluency and subsequently reading comprehension? Schwanenflugel, Hamilton, Kuhn, Wisenbaker, and Stahl (2004) offer some empirical evidence. They observed in the literature that the direct assessment of prosody is sparse. Prosody is often assessed with subjective ratings, which may be practical but could be

missing prosody's true role in reading development. These researchers sampled reading decoding speed, reading comprehension, and reading prosody from 123 second- and third-grade children and 24 adults. Standardized decoding speed and comprehension tests were used to measure these two areas. Audio equipment and software were used to measure pauses and frequency during reading to assess reading prosody. The results indicated that children who decoded quickly demonstrated more prosody in their reading than children who decoded slowly. It also indicated that prosody contributed very little over and above decoding speed to reading comprehension. Decoding speed is the major factor contributing to prosody and to comprehension. Prosody appears to be a by-product of decoding speed rather than a factor that increases comprehension. In addition, the assumption that reading comprehension contributes to increased prosody was tested but was not supported by the data. Empirical evidence suggests that the theory of automaticity may be a more reasonable explanation for repeated reading's connection to increased reading comprehension, rather than the theory that repeated reading allows the development of prosody, which in turn increases reading comprehension.

### **Reading Fluency**

The field of reading research is struggling to succinctly define the construct of reading fluency in a way that describes its intricacies yet leaves us with a definition that is measurable. Kame'enui and Simmons (2001) describe fluent reading as "intrinsically elegant in both form and cadence" and stated that "we certainly know it when we see it" (p. 203). They further state that "all authors in this special issue argue for using fluency as an index of accuracy and speed and as a primary indicator of reading competence" (p. 206). L. S. Fuchs et al. (2001) defined fluency as "the oral translation of text with speed

and accuracy" (p. 239). The National Reading Panel defined fluency as "the ability to read a text quickly, accurately, and with proper expression" (NICHD, 2000b, p. 3-5).

Rasinski (2004) defined fluency as "the reader's ability to develop control over surface-level text processing so that he or she can focus on understanding the deeper levels of meaning embedded in the text" (p. 46). Kuhn (2004) adds to the definition:

There are two primary ways in which fluency plays a part in learners' reading development. . . . The first involves development of automatic word recognition, while the second deals with prosody, or those elements of fluency that allow oral reading to sound like spoken language. (p. 338)

Other views of reading fluency are also important to note. Some authors report that reading fluency develops and is necessary, but that the exact details are vague. It works to improve comprehension, but it is difficult to know how, even with the theories that have been posited and research conducted (Kame'enui & Simmons, 2001; Meyer & Felton, 1999). In contrast, other authors feel we are uncovering the intricacies involved in the subcomponents of reading and reading fluency and are becoming better able to understand and assess its development and progression based on this knowledge (L. S. Fuchs et al., 2001; Wolf & Katzir-Cohen, 2001).

The most complete and reflective definition of fluency stems from the research of Wolf and her colleagues and reveals a thorough understanding of the relevant theories for reading fluency. Wolf and Katzir-Cohen (2001) stated:

In its beginnings, reading fluency is the product of the initial development of accuracy and the subsequent development of automaticity in underlying sublexical processes, lexical processes, and their integration in single-word reading and connected text. These include perceptual, phonological, orthographic, and morphological processes at the letter, letter-pattern, and word levels, as well as semantic and syntactic processes at the word level and connected-text level. After it is fully developed, reading fluency refers to a level of accuracy and rate where decoding is relatively effortless; where oral reading is smooth and accurate with correct prosody; and where attention can be allocated to comprehension. (p. 219)

Oral reading fluency is more than just recognizing words rapidly. As Samuels (2007) observes, "It is the simultaneity of decoding and comprehension that is the essential characteristic of reading fluency. Secondary characteristics of fluency such as speed, accuracy, and expression are indicators, but not the essential characteristics" (p. 564). It is the integration of the multiple components of reading from the brain's recognition of visual symbols to the construction of meaning from connected text. Oral reading fluency on its surface appears simplistic and unassuming, perhaps contributing to its lack of respect within the field of reading research and practice, at least until recently. But below the surface of this simple concept lies a complex world, the intricacies of which we are beginning to appreciate as they point toward the utility of reading fluency as an indicator of general reading ability.

Oral reading fluency is composed of three features: rate, accuracy, and expression or prosody. The theory of automaticity directly explains the first two. The third finds illumination in an understanding that the connection between oral and written language must be explicitly recognized and comprehended: Reading is the translation of written language to oral language. This requires the recognition that prosody is also an integral indicator of reading fluency and contributes to reading comprehension (Kuhn & Stahl, 2003). The theory of automaticity may be able to explain a piece of prosody's role, in that automatic word recognition would allow cognitive resources to be applied to detecting the prosodic cues in written language. Kuhn and Stahl (2003), however, do not believe that automaticity theory explains the expressive aspect of reading fluency. They believe that prosody stands on its own as an explanation of how the reflection of the features of oral language must be present in an oral reading for it to be considered fluent.



The distinctions between rate and accuracy, and expression, or prosody, will be further explained in a following section in the context of the assessment of reading fluency.

### Assessment of Reading Fluency

Children with reading problems do not rise above them on their own. They must have explicit and systematic instruction in reading (Moats & American Federation of Teachers, 1999) and appropriate assessment of reading skills. Legislation (NCLB) requires high-stakes achievement testing to measure reading growth on an annual basis. These types of assessments provide identification of reading problems too late in a child's development to have much potential for success in correcting reading problems. A variety of research reviews indicate that we must identify and address reading failure as early as possible (Torgeson, 1998).

The assessment of reading fluency can be a bridge for this gap. Reading fluency assessments are among the easiest and quickest assessments that can be conducted in an educational setting. LaBerge and Samuels (1974; Samuels, 1979, 1997) began the discussion about the assessment of reading fluency. Reading fluency assessment continued to mature in the work of the curriculum-based measurement (CBM) literature (Deno, 1985; Marston, 1989). The assessment of fluency using CBM directs the student to read the selected passage aloud for 1 minute. The examiner times the reader and notes reading errors. The simple metric of correct words per minute (CWPM) is calculated by subtracting the number of errors from total words read. This measurement strategy is designed to provide a quick and reliable indication of a student's general reading health, just like taking a child's temperature is a quick and reliable indication of her general health.

Meyer and Felton's (1999) review of the literature on reading fluency revealed important information about the assessment of reading fluency. They found that the most common method of assessment is measuring oral reading rate, CWPM. CWPM is a simple metric; however, it is an objective metric which reflects the culmination of the many intricacies of fluency development working together, from the subword level to fluency in the reading of connected text. They also indicated that fluency can be assessed by observing the reader's prosody. This can be done through counting the number and length of pauses during reading and by rating the prosodic quality (the intonation and inflection found in spoken language) of the student's reading. The former method has been infrequently utilized in research and the latter is much more difficult to objectively measure (Dowhower, 1991). The assessment of these two areas, oral reading rate and reading prosody, is discussed in more detail below.

### **Oral Reading Rate**

CBM procedures are designed to assess a student's facility in basic academic skills. Oral reading fluency, as measured by CWPM, is an example of oral reading rate CBM that was used in this study. CBM has been thoroughly researched (Deno et al., 2001; Wayman et al., 2007) and found to be highly reliable for many groups of students and to result in valid decisions about student academic growth (Fewster & Macmillan, 2002; Marston & Magnusson, 1985).

Deno et al. (2001) offered a summary of the utility of CBM. The developers of CBM wanted to design a system of measurement that (a) teachers could use efficiently, (b) would provide reliable and valid data that reflected a student's standing amongst peers and his individual growth, (c) would be helpful in determining the effectiveness of

a particular type of instruction or academic intervention, and (d) would provide educators information for how to develop more effective instructional programs for students. These criteria systematically guided the research in CBM for over a 20-year period.

CBM has several qualities that contribute to its usefulness for educators. CBM offers a broad assessment of the annual curriculum on a weekly basis. It allows for a repeated sampling of skills in a systematic way that results in indicators of global development within the curriculum. CBM also meets the psychometric requirements of reliability and validity. Combined, these aspects of CBM allow the practitioner to calculate the slope, or rate, of performance as the student grows. This allows teachers to determine what impact a particular method of instruction or intervention is having on a student's slope of development. CBM also allows for the systematic use of decision rules to provide for more efficient instruction. Teachers can adapt or change instruction more systematically and provide students with better instruction to meet their needs if the calculated slope of growth is determined to be inadequate based on the decision rules. Finally, the research in CBM has developed measurement techniques for reading, spelling, written expression, and math. CBM offers systematic assessment of student growth that is reliable, valid, meaningful, and efficient.

CWPM is the major assessment metric found in the CBM literature for oral reading fluency (Good & Kaminski, 2003; Shinn, 1989; Wayman et al., 2007). CWPM is typically determined by providing a grade-appropriate reading passage, or a passage which the reader is expected to be reading at the end of the year, to the reader and prompting her to begin reading aloud at the start of the passage. She is instructed to do her best reading and is told that she will be provided any words that she does not know.

The reader is told to begin and the examiner commences timing with a stop watch. Reading errors are simply marked with a slash through the word on the examiner's copy without regard for the type of error; miscue analysis is not a goal for this assessment procedure. Errors to be counted are specifically stated in the administration manuals for published versions of CBM, for example, the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002), and are described in generalized versions. The reader is prompted to stop at the end of 1 minute. The total number of errors is subtracted from the total words read in 1 minute, arriving at the CWPM figure. A total of three passages are presented and assessed in this manner, and the median score is recorded. This assessment can be given to all students three or four times per year to evaluate the entire population's growth. The assessment also can be given, using just one passage weekly or biweekly, for progress monitoring purposes for struggling readers.

Benchmark oral reading fluency rates have been empirically identified. A student is considered to be on benchmark if she is able to read grade level passages at 68 CWPM and 90 CWPM for the middle and end of second grade, respectively; 92 CWPM and 110 CWPM for the middle and end of third grade; and 105 CWPM and 118 CWPM for the middle and end of fourth grade (Good, Simmons, et al., 2002; University of Oregon Center on Teaching and Learning, 2007). Students who meet these benchmarks are highly likely to meet the next benchmark and pass state high-stakes testing (Good et al., 2001).

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2003), which finds its roots in CBM, is a tool for early assessment of the potential for reading failure. This tool can be utilized to identify students at risk of

reading failure as early as kindergarten. The oral reading fluency portions of this assessment can be used to identify students from first grade through sixth grade who are in need of fluency development in order to have a more positive outcome in reading comprehension. The passages are classified by grade level and are generally designed to be an appropriate standard for a student's oral reading skills during that grade level (Good, Wallin, Simmons, Kame'enui, & Kaminski, 2002). The qualities of CBM, such as validity, reliability, and technical adequacy, also apply to DIBELS.

Oral reading rate has been the major metric for assessing reading fluency. Alternatively, reading prosody has been used to a lesser extent as an assessment method. A discussion of reading prosody follows.

### **Reading Prosody**

Dowhower (1991) argued that measuring reading fluency consists of more than counting correct words per minute. A student's oral reading should sound like spoken language. There should be expression evident during oral reading, consisting of appropriate phrasing and intonation. She stated that, although this aspect of oral reading fluency is important to reading development, it is difficult to quantify. This neglected aspect of reading fluency is called prosody, which is the rhythm and tonal features of speech. Prosody also involves the segmentation of speech or text into meaningful units. She argued that the prosodic features of oral reading fluency should not be ignored.

The evaluation of prosody during oral reading is the evaluation of a student's ability to read with expression. Dowhower (1991) reported six aspects of prosody that could be assessed during an evaluation of reading fluency:

1. An assessment of inappropriate pauses during reading could be taken. A student is reading below the phrase level of language if he inappropriately pauses in the middle of reading a phrase. Inappropriate pausing within a phrase is an indicator of poor reading fluency.

2. The length of phrases read by a student is a second measure of the prosodic elements of reading fluency. A student demonstrates more fluency as she reads in longer phrases during oral reading.

3. A third measure of prosody is the assessment of the appropriateness of phrases. Fluent readers read with syntactically and phonologically appropriate phrases. Phrases read that do not follow punctuation, skip punctuation, or split prepositional phrases are indicators of poor reading fluency. Students who fragment text and read word-by-word are demonstrating inappropriate phrasing.

4. A fourth measure of prosody is assessing final phrase lengthening. The last word in a phrase is lengthened in speech to help mark phrase boundaries. Fluent oral reading reflects this aspect of spoken language.

5. The use of terminal intonation contours during reading is a fifth indicator of prosody. A speaker's pitch falls at the end of a sentence in oral language. A fluent reader applies this aspect of prosody during oral reading.

6. The final aspect of prosody in reading is applying appropriate stress. Stress in oral language refers to the variation in loudness during spoken language. Stressing words within a phrase conveys meaning. A fluent reader uses appropriate stress to help convey the meaning of written language.

Dowhower (1991) summarized what research has discovered, and that which is still unclear, about prosody's role in the development of oral and written language. Children are very sensitive to, and dependent upon, prosody in the oral language they hear during development. Children use the information they gain from prosody to obtain meaning. Research also indicates that a lack of prosodic cues in written language may have an impact on reading development. Certain students may have difficulty developing their reading skills because written language does not convey prosody, which contributes to meaning, as well as oral language. Research also suggests that the writer's reliance on prosody is evident, but prosody's role during the development of writing skills is unclear. Finally, there is a relationship between prosody and reading comprehension, but the exact connection is not known. The literature indicates that prosody is an important component of reading fluency.

Dowhower (1991) concluded that there needs to be a focus on prosody during reading instruction. She indicated that repeated reading is one method (as are text segmenting and auditory modeling) that is effective in promoting prosody during reading fluency instruction. Dowhower (1991) referred to Schreiber's (1980) hypothesis that repeated reading improves prosody because it gives practice to the reader in discovering the unmarked prosodic features in the text. Both Dowhower (1987) and Herman (1985) found that repeated reading significantly increased the prosodic features of reading fluency. Dowhower (1987) reached the conclusion that repeated reading allows the reader to gradually learn the appropriate phrasing within the text. The reader begins to apply appropriate prosody to the reading of written text, thereby increasing her reading comprehension.

Kuhn (2005) and Musti-Rao et al. (2009) more recently made similar observations regarding the connection between rate, accuracy, prosody, and repeated reading in the study of reading fluency. Kuhn (2005) proposed a syllogism recognizing that if fluent readers demonstrate prosody, and if prosodic readers are better able to demonstrate comprehension, then it is reasonable to assert that fluent readers can construct meaning from text to demonstrate comprehension better than students who are not fluent. Musti-Rao et al. (2009) asserted that repeated reading “inadvertently” (p. 20) promoted prosodic features in oral reading. The literature suggests that prosody is a critical component of reading fluency; however, it does not appear that instruction directly focused on prosody is required for reading fluency instruction to be beneficial. Schwanenflugel et al. (2004) would also support this assertion.

#### Reading Fluency’s Connection to Reading Comprehension

Reading fluency's correlation with reading comprehension has been solidly identified. The findings in a study published before the National Reading Panel’s (NICHD, 2000a) report found that in some instances measures of reading fluency were more correlated with a reading comprehension factor than the measure of reading comprehension from a published reading test (Shinn et al., 1992). L. S. Fuchs et al. (1988) found a correlation coefficient between a group measure of reading comprehension and reading fluency of .91 among a group of 70 middle- and junior-high-school reading-disabled students. Hosp and Fuchs (2005) found correlations for reading fluency with reading comprehension to range from .79 to .84 for a group of first- through fourth-grade students. The same group had correlations between fluency and the total reading score ranging from .83 to .91.



Other researchers have also found a strong connection between fluent reading and reading comprehension (Burns et al., 2002; Dowhower, 1994; Shinn et al., 1992; Therrien, 2004). Burns et al. (2002) studied 49 average performing third- and fourth-grade students and found that a minimum of 50 correct words per minute (CWPM) was necessary in order to support comprehension. O'Connor et al. (2002) found similar results. Dowhower (1994) summarized the research on repeated reading and concluded a strong link between fluency and comprehension. Shinn et al. (1992) studied 114 third- and 124 fifth-graders (5% receiving special education services for less than 50% of the day) and claimed that the strength of the correlation results laid to rest the reservations over fluency's connection to comprehension because the results confirmed CWPM as a valid measure of reading comprehension. Therrien's (2004) meta-analysis of repeated reading studies also demonstrated a strong connection between fluency and comprehension since repeated reading increased both fluency and comprehension.

Reading fluency is generally characterized as being necessary but insufficient for reading comprehension. Oral reading fluency indicates basic reading competence; however, it does not assume analytic skills or the ability to use reading to learn (L. S. Fuchs et al., 2001). Remembering the basic statistical premise that correlation does not prove causation, researchers have sought to explain why fluency is so closely correlated with reading comprehension. These explanations are distilled to the ideas that there are many subskills that go on during the translation of text into spoken language, and that the reader has to quickly coordinate all of these skills in a seemingly effortless manner. Oral reading fluency functions as an indicator of general reading competence because it

reflects mastery of all of these intricate processes that go into the final translation (L. S. Fuchs et al., 2001; Wolf & Katzir-Cohen, 2001).

### Reading Fluency's Relationship to Reading Test Scores

Reading fluency has been found to have relationship with various types of reading test scores. Reading fluency has been found to be highly correlated with and predictive of scores on state high-stakes achievement tests (Ax & Bradley-Klug, 2005; Good, Simmons, et al., 2002; Good, Wallin, et al., 2002; Sibley et al., 2001; Silbergitt & Hintze, 2005; Stage & Jacobsen, 2001; Wood, 2006). Students were found to have a 96% chance of passing Oregon's test if they met the reading fluency benchmark at the end of third grade (Good et al., 2001). Reading fluency has also been found to be correlated with performance on individual achievement tests (Therrien, Wickstrom, et al., 2006). Understanding fluency's relationship to high-stakes tests makes it available as a tool to identify students in need of additional reading instruction before these critical tests are given.

These data have led to the increased interest in the use of fluency assessment as a predictor of later reading development; however, practitioners should continue to be aware of the nuances of the research findings in this area. A caution given by Silbergitt, Burns, Madyun, and Lail (2006) suggested practitioners' reliance on fluency assessment for predicting test performance should be informed by their findings. Their research described fluency's relationship with high-stakes test scores as decreasing as grade level increases. The relationship between third-grade students' fluency and high-stakes test score is strong; however, the relationship falls to the moderate range after the fifth grade.

Fluency continues to be significantly related to test scores as grade level increases, but the strength of the relationship diminishes.

## **Repeated Reading**

### Description of Repeated Reading

Repeated reading, rereading a selected text for a set number of times or until a fluency criterion is met, is the fluency development tool of interest to this study.

Repeated reading is the most used method of developing reading fluency (Meyer & Felton, 1999; Samuels, 1997) and is connected to respected theory (LaBerge & Samuels, 1974; Samuels, 1994).

Samuels (1979, 1997) wrote the classic work on repeated reading which initiated a significant line of research documenting the success that the technique has had on improving fluency and subsequently comprehension. He wrote that repeated reading was designed to be a supplement to the core curriculum. It was a useful technique for students with learning difficulties; however, it could also be a useful strategy for normally developing children. Samuels described the procedure in this way: The student repeatedly reads a short passage until she reaches the desired level of fluency. This level of fluency is most objectively described as a certain number of words read per minute. The initial studies indicated that with each successive reading of the passage, reading speed increased and error rate decreased. The research also showed that the initial reading rate increased for each new passage presented and that the number of rereadings to reach the words per minute criterion decreased. These findings were interpreted as indicating a transfer of reading skills to new passages and general reading improvement.

Samuels (1979, 1997) addressed specific issues for the implementation of repeated reading. He encouraged a discussion with the students involved in the procedure concerning the need for athletes to train to excel at their sport. Athletes practice the basic skills involved in their sport until they can be executed smoothly and lead to success in the competition. Just as athletes need to practice the basics in order to improve their performance, students who are learning to read also need to practice in order to improve their skills. He also addressed an objection that some would be concerned that reading comprehension was being overlooked. He wrote that repeated reading increased reading comprehension because the student's improved decoding skills freed attentional resources for comprehension. He included that a student could always be given a different comprehension question to answer at the end of each reading to address the comprehension concern.

#### Other Methods of Reading Fluency Instruction

Nichols, Rupley, and Rasinski (2009) recognized that repeated reading is the most often used method to address reading fluency deficits, but encouraged practitioners to consider other methods in order to maintain students' engagement in learning. They indicated that repeated reading does not give enough guidance, support, and variation in instructional presentation to keep students actively engaged. Athletic coaches and music instructors know that practice alone does not make perfect. Students need active modeling and scaffolded support in order to learn most effectively and prepare themselves for perfect performance. The authors reviewed several approaches to reading fluency instruction:

1. Paired repeated reading (Koskinen & Blum, 1986) allows the reader practice with comfortable text. Students with similar reading skills are paired and provided with short text (50-100 words) within the independent or instructional level. The students first read the text silently and then the pair takes turns reading the passage aloud three times each. The listener can provide help when necessary. The pair completes an evaluation form following each reading. The pair switches roles following the third reading, and the teacher circulates through the classroom during the practice.

2. Assisted reading (Shany & Biemiller, 1995) is another method for reading fluency instruction. The student who needs practice reads aloud while a more skilled reader follows silently. The reader who is helping corrects errors or provides the word if the less fluent reader pauses for more than 5 seconds. The helping reader also provides praise for good reading.

3. Phrase reading (Henk, 1986) is the third method described. It is useful in helping students to eliminate word-by-word oral reading. The student's reading of an independent level text is recorded. The teacher then models fluent reading of the text. The next step is to divide the sentences into meaningful phrases either by marking the text or rewriting the phrases in a column format. The student can be included in deciding how to divide the sentences after the process has been modeled. The student is then directed to read the phrase-divided text two or three times. The teacher can model appropriate phrasing if necessary. The last reading is recorded, played back for the student, and compared to the original reading.

4. The oral recitation lesson (Hoffman, 1987) was designed to provide fluency instruction within the use of a basal program. Independent or instructional level text is

used. The teacher models fluent reading and then leads a discussion regarding the comprehension and prosody of the text. The students, working in pairs or individually, practice the text with instruction to pay attention to the prosodic elements. The students then perform the text in a fashion similar to reader's theater.

5. The fluency development lesson (Rasinski, Padak, Linek, & Sturtevant, 1994) is the fifth strategy reviewed. The teacher models fluent reading of a short text. Comprehension and prosody discussion is then led by the teacher. Choral reading is the next step, and it is followed by pairs or trios of students reading together three times each. A reading performance is then given. Word study and further practice reading the passage also take place.

6. Fluency-oriented reading instruction (Stahl & Heubach, 2005) is designed to use with a whole class using the basal program. Each story is modified to accommodate below-level readers. Shared reading and echo reading take place before partner reading. Students are expected to read the story to someone at home. They are also expected to read one other story at home during the week. Students have 20 minutes a day at school for free reading to encourage a wide reading experience.

7. Radio reading (Greene, 1979) allows the students to prepare for a performance of reading the text as if they were radio announcers. The students read the selected text, study the structure, and modify it in order to provide a reading that fosters comprehension in the listeners. The announcer practices the text before giving the performance. The audience then discusses the content following the announcer's reading and checks for understanding. The announcer may need to rewrite his script if the audience found it confusing.

8. Fast Start (Padak & Rasinski, 2005) is a program designed for parents to use at home with their child. The parent reads the text a few times and discusses the content with her child. They next simultaneously read the passage until the child is comfortable. The child then reads the passage alone several times with the parent providing words as necessary. Word study is also included.

### Repeated Reading's Influence on Fluency and Comprehension

Repeated reading has led to an increase in reading fluency and comprehension in numerous studies. Repeated reading has been shown to be effective in developing reading skills in a one-on-one teaching ratio (Ardoin et al., 2007; Begeny et al., 2006; Therrien, Wickstrom, et al., 2006), small-group setting (Begeny & Martens, 2006; Begeny & Silber, 2006; Homan et al., 1993; Strong et al., 2004), and partner reading with other treatment features (D. Fuchs et al., 2000). Repeated reading has also been used as the sole treatment in classroom settings (Marr & Dugan, 2007; Yurick et al., 2006). It is effective with elementary and adolescent ages, and with disabled and nondisabled students (Therrien, 2004). A review of the literature shows that repeated reading effectively increases reading fluency and comprehension.

Therrien (2004) noted that a review of the literature indicated that repeated reading is effective for increasing fluency and comprehension, but he wished to discover a more definitive conclusion. His research attempted to answer the following questions: (a) Is repeated reading effective for developing fluency and comprehension; (b) What are the essential components of an effective repeated reading program; and (c) Do students with documented learning disabilities benefit from repeated reading?

Therrien's (2004) meta-analysis discovered many important facets of repeated reading. He found that repeated reading does increase fluency and comprehension for disabled and nondisabled students, is effective in non-transfer reading situations (it improves fluency and comprehension for the passage that the student is repeatedly reading), and is effective for transfer situations (improves fluency and comprehension for reading in new passages). Therrien (2004) pointed out that the essential components of an effective repeated reading program varied depending on the intended purpose of the program (transfer or nontransfer). Regardless of the purpose, adult implementation of repeated reading gave higher results (mean fluency effect size  $ES = 1.37$ , mean comprehension  $ES = .71$ ) as compared to peer-implemented programs (mean fluency  $ES = .36$ , mean comprehension  $ES = .22$ ). If a nontransfer purpose is desired, Therrien (2004) indicated that a combined speed and comprehension cue before repeated reading was effective (mean fluency  $ES = .94$ , mean comprehension  $ES = .67$ ). The meta-analysis also indicated that either three or four readings of the passage would be sufficient to increase fluency and comprehension (mean fluency  $ES = .85$  for three readings and  $0.95$  for four, mean comprehension  $ES = .66$  and  $.71$ ).

Therrien's (2004) study also found two essential components when transfer purposes were the focus. Providing corrective feedback seemed to be essential (mean fluency  $ES = .51$ , mean comprehension  $ES = .23$ ) because all of the adult-led interventions studied ( $ES = 1.37$  for fluency) used that component. He also found that reading until a performance criterion is met (mean fluency  $ES = 1.70$  compared to  $ES = .38$  for a fixed number of readings) is important.



Therrien (2004) indicated that the nonessential components in repeated reading studies in his meta-analysis were not harmful for the students; their results were just not as pronounced. However, they do not appear to be necessary in order to achieve good results in fluency and comprehension.

In sum, effective components of research-based reading fluency instruction include: (a) adult-led instruction, (b) a speed and comprehension cue before reading, (c) three or four readings, (d) corrective feedback, (e) and a performance criterion. Nonessential but not harmful components include (a) modeling, (b) a comprehension activity, and (c) charting of performance.

### Influence of Type of Text Used During Repeated Reading

#### **Narrative and Expository Texts**

The type of text used during repeated reading may have an impact on fluency development. Children are exposed to a variety of reading texts as they matriculate. Narrative texts are used more frequently for reading instruction for elementary-school students (Duke, 2000). Many studies examined in the review of the literature rarely stated explicitly the type of texts used during the repeated reading intervention. The use of narrative texts (Kuhn, 2005) or fiction (Yurick et al., 2006) was indicated in two studies. Vaughn et al. (2000) used “largely expository text” (p. 330). Chafouleas et al. (2004) indicated the use of narrative and expository texts. The remainder of the studies did not definitively describe the type of texts used, although they often indicated the name of the published series, referred to trade books (Mathes, Howard, Allen, & Fuchs, 1998), used “a complete story, appropriate to the interests of elementary-aged students” (Sindelar et al., 1990, p. 222), used materials having high interest to secondary students

(Strong et al., 2004), or even referred to using stories written for the study (Therrien, Wickstrom, et al., 2006). Although not explicitly stated, the later studies describe stories that would generally fit the description of narrative text. This general absence of description of the reading materials used during studies of repeated reading was noted by Therrien (2004). L. S. Fuchs et al. (2001) indicated that it was an area in need of further research.

Some studies (Hiebert, 2005; Ramp, 2008; Sukhram, 2008) have sought to explore the impact of repeated reading on fluency and comprehension when expository texts are used. Hiebert (2005) found that students who read “content” text made greater gains in reading rate than students who read “literature” text; both outperformed control students. Each treatment group also out-performed the control group on comprehension, but there was no difference between treatments. Sukhram (2008) found that repeated reading increased fluency and comprehension but resulted in no difference between groups whether the text was narrative or expository. Ramp (2008) hypothesized that fluency and comprehension of text would increase for the group receiving modeled repeated reading of expository text; however, these results were not borne out. The sample in that study consisted of 45% gifted and talented students. A ceiling effect may have occurred and washed out the potential benefits of repeated reading. The differential impact of narrative versus expository text on fluency and comprehension when used with repeated reading is unclear in the literature.

### **Text Difficulty Level**

The appropriate level of text difficulty for use with repeated reading has been researched, but the results have been unclear. The trend appears to favor more difficult

material (Kuhn & Stahl, 2003), text that is at, or even above, the student's instructional level. Kuhn and Stahl's (2003) analysis of the literature suggested that greater gains in achievement would be anticipated if relatively more difficult text is used. O'Connor et al. (2002) found that students who were instructed with reading-level (instructional level) material made more progress in oral reading fluency than students instructed with grade-level material, when using the same tutoring methods. The successful progress in reading development found when using instructional level materials (93%-97% known words) would support the use of difficult, but not too difficult, material (Gickling & Armstrong, 1978; Treptow et al., 2007).

#### Instructional Models That Have Employed Repeated Reading

Although easy to assess and linked to comprehension, very little attention has been paid to reading fluency instruction in the classroom setting, which the National Reading Panel (NICHD, 2000a) called "unfortunate" (p. 11) and to which Allington (1983) referred to as "the neglected reading goal" (p. 556). The dearth of practice in this specific area of reading instruction may be negatively influencing schools' ability to produce competent readers and prepared citizens.

Reading fluency can be easily taught to groups of students in an explicit manner. Approaches such as repeated reading (Samuels, 1979, 1997), neurological impress (Flood, Lapp, & Fisher, 2005; Heckelman, 1969), and paired reading (Koskinen & Blum, 1986; Topping, 1987a, 1987b; Winter, 1996) have all been utilized to bring instruction in fluency to readers (NICHD, 2000b). Positive results have been found for impaired and non-impaired readers in various settings (NICHD, 2000b).

Methods of reading fluency instruction that have used a peer-tutoring model have found effective results. ClassWide Peer Tutoring (Delquadri, Greenwood, Whorton, Carta, & Hall, 1986; Greenwood, Arreaga-Mayer, Utley, Gavin, & Terry, 2001) is an effective instructional management tool (Greenwood, Delquadri, & Hall, 1989) that utilizes intact classrooms by pairing students who each have opportunity to play the tutor and tutee role. Peer-Assisted Learning Strategies (D. Fuchs et al., 2000) has also been shown to be highly effective (McMaster, Fuchs, & Fuchs, 2006). Repeated reading in pairs (Koskinen & Blum, 1986) and general peer tutoring (Dufrene, Henington, & Townsend, 2006) have also used repeated reading within their context.

#### Research Designs Utilized to Study the Impact of Repeated Reading

Repeated reading has been studied using a number of research designs, but the use of the experimental design has been infrequent. Of 20 reviewed, four were experimental (Homan et al., 1993; Kuhn, 2005; Marr & Dugan, 2007; Therrien, Wickstrom, et al., 2006), four were quasiexperimental (S. K. Green, Alderman, & Liechty, 2004; Mathes et al., 1998; Sindelar et al., 1990; Vaughn et al., 2000), two were multiple baseline across groups (Begeny & Martens, 2006; Strong et al., 2004), five were multiple baseline across individuals (Musti-Rao et al., 2009; Nanda & Fredrick, 2007; Nelson et al., 2004; Valleley & Shriver, 2003; Yurick et al., 2006), and five used alternating treatments (Ardoin et al., 2007; Begeny et al., 2006; Begeny & Silber, 2006; Chafouleas et al., 2004; Rasinski, 1990). The multiple baseline and alternating treatment studies generally used 10 or fewer participants, whereas the quasiexperimental and experimental studies generally used 25 or more participants. Expanding the presence of experimental evidence for repeated reading would be helpful to the field.

No experimental studies were found that used repeated reading as the only treatment in a whole classroom, or large-group, setting. Although Marr and Dugan (2007) published an article reviewing data presented at a conference that used an experimental design, it included too few details for purposes of generalization. Their study also employed choral reading and model reading with a higher performing peer, methods that may have impacted the results beyond repeated reading instruction as the sole intervention. Yurick et al. (2006) used classrooms of eight and 18 students, and a pull-out group of 10 students; however, a multiple baseline across participants was used as the design. Musti-Rao et al. (2009) also implemented repeated reading in a classroom of 32 students using a multiple baseline across participants.

#### Repeated Reading Student Grouping Patterns

Studies in the past utilizing repeated reading to develop fluency have used three different methods to group students. Half of the studies reviewed used one-on-one instruction with one student and one adult tutor (Ardoin et al., 2007; Begeny et al., 2006; Chafouleas et al., 2004; Nanda & Fredrick, 2007; Nelson et al., 2004; Sindelar et al., 1990; Therrien, Wickstrom, et al., 2006; Valleley & Shriver, 2003). Another procedure has utilized partner reading where students are grouped into dyads. Articles dealing with the application of repeated reading in the classroom by grouping for one-on-one instruction could be interpreted as either using a one-on-one adult to student ratio or one-on-one peer reading (Al Otaiba & Rivera, 2006; Therrien, Gormley, & Kubina, 2006; Therrien & Kubina, 2006). Other studies have been conducted using a 1:2 through 1:6 adult to student ratio (Begeny & Martens, 2006; Begeny & Silber, 2006; Homan et al.,

1993; Strong et al., 2004). Positive results have been found with all of these grouping patterns.

A few studies of repeated reading have been conducted with intact classes (Marr & Dugan, 2007; Mathes et al., 1998; Musti-Rao et al., 2009; Vaughn et al., 2000; Yurick et al., 2006). These studies utilizing whole classrooms implemented some type of partner reading or repeated reading in pairs to manage the repeated reading. Students in partner reading studies have at times been paired by high and low reader, with the high reader serving as a model for the lower performing reader (D. Fuchs et al., 2001; D. Fuchs et al., 2000; McMaster, Fuchs, et al., 2006). Students identified as being at risk for reading failure have been paired in other studies (Musti-Rao et al., 2009; Yurick et al., 2006).

#### Types of Readers That Have Benefited From Repeated Reading

Many types of students have benefited from reading practice using repeated reading. The majority of the studies have focused on elementary-age students, while some studies looked at repeated reading's impact on adolescent students (Begeny & Martens, 2006; Valleley & Shriver, 2003). Repeated reading has been found to be effective with a whole host of student types, producing positive results for impaired and non-impaired readers in various settings (NICHD, 2000b). Repeated reading has also been found to be effective with students who are visually impaired (Koenig & Layton, 1998), hearing-impaired (Ensor, 1992), and new language learners (Taguchi, Takayasu-Maass, & Gorsuch, 2004).

#### Number of Minutes Necessary for Repeated Reading Instruction

It is important to know the optimally balanced amount of time to devote to fluency instruction since there are many time demands on classroom schedules. Jenkins,

Matlock, and Slocum (1989) found that effective results in vocabulary development could be had at between 10 and 20 minutes per day of structured instruction. The National Reading Panel (NICHD, 2000b) indicated the time spent on fluency instruction in the studies they examined ranged from 15 to 30 minutes per day. Musti-Rao et al. (2009) found successful results in this time range.

### Repeated Reading's Place Within Response to Intervention

One way to manage the movement to increasing an entire school's improvement in reading and to improved performance on high-stakes achievement testing is to utilize a tiered system of instructional delivery (Batsche et al., 2006; Burns & Gibbons, 2008; Jimerson, Burns, & VanDerHeyden, 2007; Vaughn & Linan-Thompson, 2003). Developed as a reaction to the overidentification of students with special education disabilities, a tiered system of instructional delivery, also known as response to intervention (RTI), is a way to address the learning and behavioral needs of all students in a school.

The model (Batsche et al., 2006; Jimerson et al., 2007) is generally divided into three or four tiers, with each tier's instructional intensity and focus increasing to support the learning needs of struggling students. The first tier consists of effective general curriculum and instruction for all students. The literature encourages schools to select curriculum which is scientifically based, curriculum which is shown to be effective for a majority of students in most situations. The universal screening of all students takes place at this level to monitor the learning progress of all and is used to help determine which students require more intense instructional activities. The universal screening

procedures for reading are generally curriculum-based measurement tools, that is, oral reading fluency measures based on the number of correct words read per minute.

Students who are not meeting benchmark expectations during tier-one instruction are provided supplementary instruction of more specificity and intensity within small groups (Batsche et al., 2006; Jimerson et al., 2007). Tier-two instruction provides struggling learners with intensive support to encourage the development of expected skills. The students' progress is monitored more frequently during this phase in order to judge the effectiveness of the instructional strategies for these individuals.

Students who continue to significantly struggle even when provided with intensive tier-two instructional services follow the continuum to the even more intense intervention of tier three (Batsche et al., 2006; Jimerson et al., 2007). Students who receive tier-three instruction are generally provided with individualized instruction in a one-to-one format. The student's instructional needs are more precisely assessed and appropriate teaching strategies are implemented to address these individual needs. Students who continue to fail to meet benchmark expectations with the intensive tier-three instruction, or students who become successful but only with the intensity provided at tier three, can be considered candidates for a comprehensive evaluation for the determination of eligibility for special education.

The concept of tier two is a framework with which to deliver repeated reading instruction for reading fluency development for a group of struggling students across grade level and classroom boundaries. It is a context in which the effect of repeated reading with pairs of students in a large-group setting on fluency and comprehension for students at risk for reading failure needs to be studied.



## Summary

Repeated reading in a large-group setting's potential impact on fluency and comprehension for students at risk for reading failure has a solid theoretical and empirical foundation. The theory of automatic information processing in reading suggests that repeated practice of reading skills enables a student to achieve an effortless and automatic reading rate. The ability to read text "quickly, accurately, and with proper expression" (NICHD, 2000b, p. 3-5), that is, fluency, although necessary but insufficient for comprehension, is closely connected to comprehension. Repeated reading has been found to aid all types of learners, whether disabled or not, whether young or old, whether working with an adult or peer, and to increase fluency and comprehension in both the material being currently read and in new material. Repeated reading in a large-group setting has the potential to be a powerful and efficient tool to decrease the unacceptably high rates of reading failure in our nation's classrooms.

## CHAPTER 3

### METHODS

#### **Introduction**

Increases in reading fluency consistently translate into increased comprehension. Fortunately, there is an effective and relatively easy way to increase fluency: repeated reading. However, the question remains, can a classroom teacher organize the classroom in such a way as to provide repeated reading to struggling readers in an efficient manner that does not add undue burden to an already tight schedule? This study sought to determine if repeated reading can significantly increase struggling readers' fluency and comprehension when used with pairs of students in a large-group setting. An experimental study using repeated reading as the only treatment with a large group (the number of students in a typical classroom setting) was not found in the literature.

#### **Research Questions**

The core questions of this study are:

1. How do the reading fluency skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading fluency, after adjustment for beginning fluency?
2. How do rates of reading fluency growth for students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of growth in reading fluency, after adjustment for beginning fluency?

3. How do the reading comprehension skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading comprehension, after adjustment for beginning comprehension?

### Participants

The participants for the study were 19 students from second grade, 20 from third grade, and 18 from fourth grade, for a total of 57 students. The girls represented 47% and the boys 53% of the sample (see Table 1). The racial description of the participants is presented in Table 2 and included 40% African American, 42% Caucasian, 2% Hispanic, and 16% Multiracial. Students receiving special education represented 11% of the sample, the details provided in Table 3.

Table 1

*Gender*

Grade	<u>Intervention</u>		<u>Control</u>		Total (%)
	Girls (%)	Boys (%)	Girls (%)	Boys (%)	
2	2 (17)	7 (47)	3 (20)	7 (47)	19 (33)
3	7 (58)	3 (20)	6 (40)	4 (27)	20 (35)
4	3 (25)	5 (33)	6 (40)	4 (27)	18 (32)
Total	12 (21)	15 (26)	15 (26)	15 (26)	57

Table 2

*Race*

	<u>Intervention (%)</u>		<u>Control (%)</u>		<u>Total (%)</u>
Caucasian	15	(56)	9	(30)	24 (42)
African-American	8	(30)	15	(50)	23 (40)
Biracial	4	(15)	5	(17)	9 (16)
Hispanic	0	(0)	1	(3)	1 (2)
Total	27		30		57

Table 3

*Mild Special Education Disability*

Grade	<u>Intervention</u>		<u>Control</u>		Total (%)
	Girls (%)	Boys (%)	Girls (%)	Boys (%)	
2	0 (0)	1 (2)	0 (0)	0 (0)	1 (2)
3	1 (2)	0 (0)	0 (0)	0 (0)	1 (2)
4	0 (0)	2 (4)	1 (2)	1 (2)	4 (7)
Total	1 (2)	3 (5)	1 (2)	1 (2)	6 (11)

Note. All percentages are calculated from the total sample.

The students came from nine classrooms in a kindergarten through fourth-grade school building in a Midwestern mid-sized urban school district. The participants were randomly selected from a subset of the entire population of the second- through fourth-grade students in the school building. The subset was all students who scored below the winter standard of the Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF; Good, Kaminski, et al., 2002) assessment. The students were then randomly assigned, stratified by grade level, to the intervention or control group, resulting in an equal number of second, third, and fourth graders in each group. Data were analyzed for 27 students in the intervention group and 30 in the control group. The intervention group began with 30 students; two moved during the course of the study and a third elected to discontinue participation.

### **Setting**

The study took place in a school building in a Midwestern mid-sized city. Demographic data retrieved (Indiana Department of Education, 2009) for the 2008-09 school year indicated that this school served 366 students in kindergarten through fourth grade, 47.4% of which were girls and 52.6% boys. The ethnic breakdown included 144 (39%) White, 110 (30%) Black, 48 (13%) Hispanic, six (2%) Asian, two (1%) Native American, and 56 (15%) multiracial students. The socioeconomic data indicated 82% of the students were eligible for the federal free or reduced-price lunch program. The attendance rate was 94.3%.

Student migration data recorded that 47 students moved from the school to another building (not due to grade level promotion) between October 1, 2006, and October 1, 2007, for a rate of 10%. A total of 70 students moved into the building during

the same time period for a rate of 15%. Migration data from 2007 to 2008 are not presented due to an unusual migration-out rate due to the school building's renovation. High-stakes test data indicated that 35% of third-grade students and 35% of fourth-grade students passed both the English/Language Arts and Math sections of the state accountability test, Indiana Statewide Testing for Educational Progress-Plus (ISTEP+). Special education data revealed that 60 students, or 16% of the student population, received special services (Indiana Department of Education, 2009).

### **Variables**

The following variables were utilized. The independent variable, that which is manipulated during the study (Howell, 2002), was repeated reading (Therrien, 2004) with pairs of students in a large-group setting. The dependent variables, or the data that are collected to evaluate the research questions (Howell, 2002), included oral reading fluency (L. S. Fuchs et al., 2001; Shinn et al., 1992) as measured by the DORF (with a pretest of the DORF serving as a covariate), slope of reading fluency growth (Deno et al., 2001) using weekly progress monitoring as measured by DORF (with the first progress monitoring probe serving as a covariate), and reading comprehension skills as measured by the Group Reading Assessment and Diagnostic Evaluation (GRADE; Williams, 2001) test (with an alternate form pretest serving as a covariate.)

The following were potential moderator variables. An established structure and routine was implemented during the instructional time. This served to maximize the academic engaged time and subsequent learning for the students (Paine, Radicchi, Rosellini, Deutchman, & Darch, 1983). Self-monitoring procedures were also implemented. Self-monitoring appears effective for increasing academic productivity

(Shimabukuro, Prater, Jenkins, & Edelen-Smith, 1999). The self-monitoring procedures added accountability, helping to hold the students responsible for following the procedures. Kuhn and Stahl (2003) described this holding of responsibility as a distinction between traditional learning centers found in classrooms and studies which have found significant results for reading fluency instruction. The student pairs recorded the number of repeated reading trials required to meet the criterion. The students also recorded the time and errors for each reading. Both classroom routine and structure, and self-monitoring of performance, are moderating variables that potentially influenced the outcome of the study.

### **Instruments**

The study examined the research questions based on the data from the following instruments. The students participating in the study received a pre- and posttest of Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF; Good & Kaminski, 2002). Each student received the DORF appropriate for her grade level. DORF is a fluency-based measure of general reading skills. The student was given a reading passage according to her grade level and was instructed to do her best reading. The student was given 1 minute to read and was provided any word for which she hesitated in identifying for more than 3 seconds. Reading errors were recorded with a slash mark and were subtracted from the total words read in 1 minute to produce the reading rate. The student read three passages in this manner and the median score was recorded.

The reliability and validity for curriculum-based measurement (CBM) reading procedures, from which DORF has its history, have a firm base in the literature. Marston

(1989) summarized the early studies that support the technical adequacy of CBM. Tindal, Marston, and Deno (1983) found test-retest reliabilities for elementary-aged students to range from .92 to .97, adequate enough for individual high-stakes decision-making (Salvia, Ysseldyke, & Bolt, 2007). Alternate-form reliability for passages from the same grade level ranged from .89 to .94. Criterion-related validity was reported by Good and Jefferson (1998). They found correlation coefficients ranging from .52 to .91 for various reading measures in a survey of eight studies. Predictive criterion-related validity for DORF indicates that students who reach empirically established benchmarks have a high probability of passing state high-stakes tests of reading proficiency (Ax & Bradley-Klug, 2005; Good et al., 2001; Sibley et al., 2001). Construct validity related to oral reading fluency's relationship to reading comprehension is supported by Kranzler, Brownell, and Miller (1998).

Curriculum-based measurement (CBM) has met resistance from the education community in part due to its perceived lack of face validity because the measures seem too simple to be an accurate indicator or predictor of a student's general skills. Fewster and MacMillan (2002) presented evidence to the contrary by examining the relationship between fluency-based measures of reading and writing with later student grades. They found that CBM data gathered during Grades 6 and 7 reliably predicted end-of-the-year teacher-granted grades in English and social studies for Grades 8, 9, and 10. The reliability and validity of CBM and DORF are solidly documented from a variety of perspectives.

The second instrument administered was the progress monitoring probes from DORF. They were administered every week during the study for the intervention and



control groups. The probes that were administered were matched to the student's grade level. The progress monitoring probes are an alternate form of DORF that are administered similarly to the pre- and posttest assessments, with the difference being that only one passage is administered during each period. These alternate forms were used to track the student's progress during the time of the intervention.

The students also received the Group Reading Assessment and Diagnostic Evaluation (GRADE) as a pre- and posttest (Williams, 2001). The GRADE is a norm-referenced test of reading achievement that can be administered individually or in a group. It is designed for students between the ages of 4 years and 18 years. The assessment is useful for (a) placement and planning, (b) diagnostic description of reading skills, (c) testing skills on and out of level, (d) progress monitoring, and (e) research. The test assesses five areas of reading: prereading, reading readiness, vocabulary, comprehension, and oral language. Raw scores can be converted into a variety of standard scores. The test was standardized from a large sample; however, an incomplete description of the sample is given and certain segments were either over- or underrepresented. Total test scores have strong reliability ranging from .89 to .98. Almost one-third of the subtest coefficients reached or exceeded .90. Alternate form reliability ranged from .81 to .94. Test-retest reliability coefficients ranged from .77 to .98. Content validity was documented by providing rationale for how the test was constructed, description of the item tryout process, and input from teachers on how to best modify the content and procedures. Criterion-related validity ranged from .61 to .90 for measures of reading achievement such as the Iowa Test of Basic Skills, the California Achievement Test, the Peabody Individual Achievement Test-Revised, the Terra Nova,

and the Gates-MacGinitie Reading Tests. Construct validity was demonstrated by showing a correlation between age and test scores along with studies demonstrating that students with learning disabilities had lower scores compared to students in the standardization sample (Salvia et al., 2007). The GRADE is an adequate assessment of reading ability for this study.

### **Materials**

The reading materials used for the repeated reading treatment were taken from Reading A-Z (2009). This is a system of leveled texts written to meet pre-established criteria derived from examining the Reading Recovery and Fountas and Pinnell (1996) leveling guides and other factors that affect test difficulty. These materials were chosen because they were already available to the school. The levels are developmental and range from Early Emergent Readers (Levels aa-C), Emergent Readers (Levels D-J), Early Fluent Readers (Levels K-P), and Fluent Readers (Levels Q-Z). The system also includes a separate selection of books for each level, which was used when identifying the instructional level for each student. Each level contains a variety of fiction and nonfiction titles. For example, Level K contains 28 titles, 12 of which are fiction and the remaining 16 nonfiction. Level Q contains 37 titles, 20 of which are fiction and the remaining 17 nonfiction. Each student chose the title he wished to use for repeated reading; both the fiction and nonfiction books were available. Passages containing 100 words were marked off in each book before being made available for repeated reading. Students chose a different book after finishing all of the 100-word passages in the current book.

## **Procedures**

Pretest data collection began with the DORF and was initiated during the first week of February 2009. These pretest data were collected from all second- through fourth-grade students in the building. This was completed by arranging for a time acceptable to the teacher for me to enter the room and read with each student individually while the rest of the classroom was engaged in some other instructional activity. The data were entered into a spreadsheet and sorted by correct words per minute (CWPM). The students who scored below the winter benchmark were then randomly assigned in a stratified manner by grade level to either the intervention or control group.

The GRADE pretest was administered in groups of approximately 20 students. The groups were mixed with intervention and control students from the same grade. The pretesting was conducted between the last week of February 2009 and the second week of March 2009.

The students received training in the repeated reading procedures prior to the start of the large-group setting. Each student received two sessions of training in small groups of 10. The students were introduced to the method of repeated reading and to the procedures used to manage the group.

A goal for the treatment was for the students in the intervention group to receive the repeated reading instructional practice three to four times per week for a total of 40 sessions, each lasting 15 minutes (Meyer & Felton, 1999); this was nearly attained but was cut short due to the arrival of end of the school year. There were 32 large-group sessions following the small-group training sessions. The students averaged 28 days of attendance in the large-group sessions. The typical attendance for each large-group

session was 25 students. As with any natural school setting, there were many days when certain groups of students were not able to meet with the large group due to field trips or other school events. Entire classrooms of participant students were missing on 6 days; classrooms missed the large-group session but were pulled out in small groups at a different time during the day on 5 days; and students were pulled out in groups of approximately 15 on 3 days of high-stakes testing.

The intervention took place from mid-March 2009 through mid-May 2009 for a total of 7 weeks. Each session lasted between 15 and 20 minutes with approximately 5 to 10 additional minutes of transition time (moving to the classroom used for the instructional sessions, review of procedures, announcements, etc.). The students were out of their home classrooms for approximately 30 minutes during each session.

Students participated in the repeated reading in pairs. This configuration fits Kuhn and Stahl's (2003) definition of assisted-reading approaches to reading-fluency instruction applied to the classroom setting. This procedure allowed for the highest percentage of academic engaged time and enabled me to act as general manager while the students become self-managers of their own reading behavior (Archer et al., 2003). The pairs were initially created by grouping students with similar instructional level. Some of the pairs were modified for students who were having difficulty following the procedures or when the students seemingly did not interact well together. Each student repeatedly read an instructional level passage for a minimum of three readings (Kuhn & Stahl, 2003; O'Shea, Sindelar, & O'Shea, 1985, 1987; Therrien, 2004). A fourth reading was completed if the time and error criterion based on current reading performance (Carnine, Silbert, & Kameenui, 1997, pp. 199-202; Therrien, 2004) was not met during the first

three readings. The listening member tallied the number of errors, recorded the reading time, and shared this information with the reader. The roles were switched and the student then listened to his partner repeatedly read a passage until the same criteria were met.

Each student's instructional level was determined before the treatment began by surveying her performance within the assessment books provide by the Reading A-Z system (2009). The book level for which the student achieved 93% to 97% accuracy (instructional level) was identified (Gickling & Armstrong, 1978; Treptow et al., 2007). The student was placed in the highest book level for repeated reading if multiple book levels were identified as being within the student's instructional level.

The time criterion for repeated reading was determined using procedures established by Carnine et al. (1997). Each student's current instructional level oral reading rate was determined by examining her performance on the assessment books mentioned above. A goal was set to read at a 40% higher rate. This 40% improvement of rate goal was calculated by multiplying the correct words per minute (CWPM) from the student's instructional level oral reading rate by 1.4 to determine the desired repeated reading rate. This rate goal was then translated to the time criterion for reading a 100-word passage using the conversion table found in Carnine et al. (p. 201). The students were required to read the 100-word passages within the time criterion with two or fewer errors on at least one of the first three rereadings during the intervention. They were required to read a fourth time if the time and error criterion was not met. Carnine et al.'s procedure for reading until a criterion is met is supported by Therrien's (2004) meta-analysis of repeated reading studies.

All of the students in the intervention group received the treatment as a whole group in a single classroom (large-group setting) to determine if such a situation could be arranged to produce increases in reading fluency and subsequent reading comprehension on a group reading assessment. An experimental study of this nature was not found in the literature. Student pairs were assigned based on common instructional level rather than pairing higher and lower reading peers. All students participating were reading below the DIBELS benchmark; however, there still was variability in instructional level. The lowest reader began at level C and the highest reader at level W. All of the students needed to maximize academic engaged time at an appropriate level of difficulty. Equally skilled students were initially paired together to allow the higher achieving readers participating in the reading fluency intervention the most opportunity for optimal progress. Some of student pairs were eventually adjusted to pair higher readers with lower readers who were having difficulty independently following the procedure with a lower reading partner, and in some cases to avoid student pairs who seemed to have trouble cooperating. Reading instructional level passages leads to higher motivation (on-task behavior) and higher achievement (reading comprehension) (Gickling & Armstrong, 1978; Treptow et al., 2007). Pairing students by similar reading levels as much as practical better served the purposes of high motivation and high achievement in this study.

The use of procedure and routine was crucial if a group of 27 students from nine classrooms was expected to gather in one location and self-manage the repeated reading practice within a 15-minute time frame (Paine et al., 1983). The students were taught procedures to transition smoothly from their homeroom to the classroom used for the

study, such as exiting the homeroom and navigating the hallways quickly and quietly. Students were also trained in procedures to initiate the repeated reading exercise. Once in the classroom, students followed procedures to gather materials and locate their partner. The first student began the fluency practice by taking her turn repeatedly reading an instructional level passage until she reached the criterion. Procedures were established and the students trained in order to maximize the repeated reading treatment during the instructional time. The instructor made random checks of pairs to confirm that the procedures were being followed appropriately. Each student also kept written records regarding the criteria for his repeated reading. The procedures continued with the partner student until it was time to return to the homeroom. Procedures were established and the students trained to transition back to the homeroom. These procedures included discontinuing the fluency practice, choosing new materials when necessary, returning materials to the appropriate location, assembling as a group at the classroom door, moving through the hallway in a quiet and respectful manner, and reintegrating into the homeroom as appropriate.

The students each had a folder that contained the story booklet and log page. The students chose a new book on their instructional level once they had read all of the 100-word selections in the current book. The student's instructional level and time criterion goal was recorded at the top of each log page. The log page contained two lines for each day of repeated reading. The story's title and the date were recorded on the first line. The second line contained cells for each of the four potential readings. The listening member of the pair recorded the time and number of errors for each reading. These

records were compared to the goal criterion at the top of the page to determine if the goal had been met within three readings, or if the fourth reading was required.

The progress monitoring data used to address the second research question were collected each week. The data were generally collected on Wednesday afternoon. The Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF) assessment protocol was followed for administration and scoring (Good & Kaminski, 2002). The students in both the intervention and control groups were assessed individually either in the classroom or hallway.

Posttest data for the Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF) and Group Reading Assessment and Diagnostic Evaluation (GRADE) were collected during the third and fourth weeks of May after the intervention was completed. The DORF was administered only to students in the intervention and control groups due to time constraints. It was administered individually either in the classroom or hallway. The GRADE was administered in groups of approximately 20 students. The groups were again mixed with intervention and control students from the same grade.

Treatment fidelity was addressed as follows. I was the only adult monitoring the intervention, including all data collection and supervision of the treatment. The students were given initial training in small groups. They were given a verbal explanation of the purpose of repeated reading, and an introduction to the reading materials and daily recording protocol. The time and errors for each reading were recorded on this protocol. I then modeled both repeated reading and the behaviors of the listening-pair, including error monitoring and use of the stop watch. Next the students were placed in pairs,



practiced, and received feedback from me. Repeated reading with pairs of students in a large-group setting was initiated a few days later. The students kept the written protocols during the intervention as a means of treatment fidelity. I circulated through the room during the intervention to observe adherence to the procedures, giving feedback and encouragement to the students. I stopped to observe pairs, listening to the reading and observing the recording of the time and errors on the protocol. Treatment fidelity data of a more formal nature were not collected during this study.

### **Design**

An experimental pretest-posttest with control group design was used to examine how repeated reading alone within a large-group setting used for only a brief portion of the day affects performance on measures of reading fluency and reading comprehension. The students were randomly assigned by grade level to either the intervention or control group.

This study utilized features of instruction that have been shown to be effective and recreated them in a setting that is easily replicated in a typical classroom. It was the goal to create a system that produced tangible results on measures of reading fluency and reading comprehension, could be managed by one adult, was of short but sufficient daily duration, required reasonable teacher preparation time, had easily obtained and inexpensive supplies, ensured high rates of academic engaged time, provided a system of self-monitoring and accountability, and set challenging short-term goals based on current performance.

## **Analysis**

The results from the dependent measures were analyzed to determine the effect of the intervention on the students' reading fluency and reading comprehension. The first research question, (a) How do the reading fluency skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not?, and the third research question, (b) How do the reading comprehension skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not?, were examined by utilizing a one-way analysis of covariance (ANCOVA) using the pretest scores as the covariates.

The second research question, How do rates of reading fluency growth for students who receive repeated reading with pairs of students in a large-group setting differ from students who do not?, was addressed by computing the slope for each student using the ordinary least squares (OLS) method (Riley-Tillman & Burns, 2009). The numerical slope was treated as the dependent variable with the first point of the progress monitoring data serving as a covariate, recognizing that oral reading slope varies depending on the student's beginning reading skills (Silberglitt & Hintze, 2007). A 2 x 3 ANCOVA examining the data by treatment condition and grade level was employed. The data were analyzed using PASW Statistics 17.0 after examination of the assumptions of ANCOVA.

## **Summary**

This chapter has discussed the methodology employed during this study of the effect of repeated reading with pairs of students in a large-group setting on fluency and comprehension for students at risk for reading failure. The participants, setting,

variables, instruments, materials, procedures, design, and statistical analyses of the study were described. This study will add to the research literature by taking the effective reading instructional method of repeated reading and examining its ability to demonstrate similar results in a large-group setting.

## CHAPTER 4

### RESULTS

#### **Introduction**

The problem of reading failure in American schools, the importance of reading fluency to general reading ability, foundational theory, reading fluency, reading fluency's connection to comprehension, and repeated reading have been introduced and discussed. This study utilized a pretest-posttest experimental with control group design to examine if repeated reading could produce the same changes in reading fluency and reading comprehension in a large-group setting as has been demonstrated in smaller groups of students. A presentation and analysis of the results of this study will be discussed next.

#### **Examination of Assumptions**

The data were analyzed using analysis of covariance (ANCOVA), a procedure useful for controlling error variance and increasing power when using a pretest and posttest (Howell, 2002). Screening of the data and evaluation of the assumptions for ANCOVA were conducted before the analysis continued. S. B. Green and Salkind (2003) stated that the following assumptions are critical in order to evaluate the F statistic for ANCOVA with confidence: (a) independence, (b) normality, (c) homogeneity of variance, (d) linearity of the dependent variable and covariate, and (e) homogeneity of slopes.

The assumption of independence was addressed through random assignment of the participants to either the intervention or control group (Howell, 2002).

Normality was addressed by examining the skewness and kurtosis of the data. All estimates of skewness and kurtosis were within two standard errors for each of the three research questions, with the exception of two subsets of the data; in these cases, the estimates of skewness and kurtosis were less than the absolute value of 2.00 (skewness of slope of reading fluency growth 0.824; skewness of GRADE posttest 0.862). The data are presented in Table 4. ANCOVA is robust for minor violations of normality (Howell, 2002). A total of three cases were omitted as outliers for analysis of research question 2, and two cases were omitted for question 3.

Homogeneity of variance was evaluated through Levene's Test of Equality of Error Variances, which indicated a nonsignificant result for each dependent variable: DORF (fluency)  $F(1, 55) = .46, p = .503$ ; slope (rate of reading fluency growth)  $F(5, 48) = 1.00, p = .427$ ; and GRADE (comprehension)  $F(1, 53) = .88, p = .352$ . The assumption holds for these data for each of the three research questions.

Linearity of the covariate and dependent variables was examined with a 2-tailed Pearson correlation coefficient. The results of the analyses show that both DORF pretest and posttest ( $r(55) = .85, p < .001$ ) and GRADE pretest and posttest ( $r(53) = .78, p < .001$ ) correlations were both significant and strong (see Table 5). These strong correlations would be expected based on the reliability data provided by previous research and technical manuals. Curriculum-based measurement (CBM) reading has alternate form reliability ranging from .89 to .94 for elementary-aged children and test-retest reliability ranges from .92 to .97 (Tindal et al., 1983). DORF alternate form

Table 4

*Screening for Normality of Data*

Variable	<i>M</i>	<i>(SD)</i>	Distribution of Scores			
			Skewness ( <i>se<sub>s</sub></i> )		Kurtosis ( <i>se<sub>k</sub></i> )	
DORF pretest	66.32	(19.11)	0.070	(0.316)	-0.705	(0.623)
DORF posttest	80.95	(22.35)	-0.259	(0.316)	-0.472	(0.623)
PM #1	79.93	(22.91)	-0.435	(0.316)	-0.713	(0.623)
Slope	1.62	(2.05)	0.824	(0.316)	1.253	(0.623)
GRADE pretest	87.95	(12.80)	0.477	(0.316)	0.027	(0.623)
GRADE posttest	88.93	(11.49)	0.862	(0.316)	0.803	(0.623)

Note. *n* = 57. DORF = Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency; PM #1 = progress monitoring probe #1; Slope = slope of reading fluency growth; GRADE = Group Reading Assessment and Diagnostic Evaluation.

Table 5

*Correlation Coefficients for Covariates and Dependent Variables*

Covariate	Dependent Variable	<i>N</i>	<i>r</i>	<i>p</i>
DORF pretest	DORF posttest	57	.85	< .001
PM #1	Slope	54	.19	.173
GRADE pretest	GRADE posttest	55	.78	< .001

Note. DORF = Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency; PM #1 = progress monitoring probe #1; Slope = slope of reading fluency growth; GRADE = Group Reading Assessment and Diagnostic Evaluation.

reliability was found to be .93 for second grade, .92 for third grade, and .92 for fourth grade (Dynamic Measurement Group, 2007). GRADE reported corrected coefficients for the alternate form reliability to be .90 for second grade, .94 for third grade, and .87 for fourth grade. The test-retest reliability was .89 for second grade, .93 for third grade, and .98 for fourth grade (Williams, 2001). The correlation between the first progress monitoring probe and the slope of progress monitoring ( $r(52) = .19, p = .173$ ) was not significant. Moderate correlation for the covariate with the dependent variable is desired for ANCOVA; however, minor violations of the assumption are tolerated (Howell, 2002). The homogeneity of slopes assumption was tested next to determine if the slopes relating the covariate to the dependent variable are equal across the intervention and control groups. The results were nonsignificant for DORF  $F(1, 53) = 3.24, p = .078$ , partial  $\eta^2 = .06$ ; slope  $F(1, 50) = .17, p = .681$ , partial  $\eta^2 = .00$ ; and GRADE  $F(1, 51) = 1.05, p = .309$ , partial  $\eta^2 = .02$ , supporting the assumption for these data for each of the research questions. The relationship between the covariates and the dependent variables did not vary significantly as a function of the condition.

The evaluation of assumptions revealed that only minor violations of the assumptions of ANCOVA were present. ANCOVA is robust to these violations and the resulting F statistics can be evaluated with confidence (Howell, 2002).

### **Research Question 1**

Research question 1 examined the effect of repeated reading with pairs of students in a large-group setting on fluency. Table 6 displays the means, standard deviations, and effect sizes for grade level and treatment condition. The results from the ANCOVA conducted to test the effect of repeated reading with pairs of students in a

Table 6

*Descriptive Statistics for Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (Fluency)*

Grade	n	Intervention			Control			Effect Size								
		Pretest		Posttest	Pretest		Posttest			Adjusted <sup>a</sup>						
		M	(SD)	M	(SD)	M	(SE)	n	M	(SD)	M	(SD)	M	(SE)	partial $\eta^2$	Cohen's d
2	9	44.00	(10.64)	60.89	(18.30)	84.25	(4.75)	10	51.80	(10.11)	65.10	(20.99)	80.30	(4.12)	---	-0.23
3	10	71.60	(12.81)	86.70	(9.86)	81.17	(3.81)	10	72.50	(10.04)	89.10	(13.63)	82.63	(3.82)	---	-0.21
4	8	79.00	(16.97)	87.00	(20.79)	73.72	(4.45)	10	79.30	(18.00)	96.10	(25.92)	82.51	(4.05)	---	-0.41
Total	27	64.59	(20.12)	78.19	(20.21)	79.71	(2.30)	30	67.87	(17.68)	83.43	(24.19)	81.81	(2.18)	.01	-0.24

<sup>a</sup> Adjusted means are adjusting for the covariate pretest Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency = 66.32.

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large-group setting on fluency, after adjustment for beginning fluency, are displayed in Table 7. The dependent variable was the DORF posttest, with the DORF pretest serving as the covariate. The result was nonsignificant,  $F(1, 54) = .40, p = .529$ , partial  $\eta^2 = .01$ , Cohen's  $d = -0.24$ . This indicates that after adjustment for beginning fluency, repeated reading with pairs of students in a large-group setting did not lead to different levels of fluency between the treatment conditions.

Table 7

*Analysis of Covariance for Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (Fluency)*

Source of Variation	SS	df	MS	<i>F</i>	<i>p</i>
DORF pretest	20070.23	1	20070.23	144.18	< .001
Condition	56.02	1	56.02	.40	.529
Error	7517.21	54	139.21		
Total	401470.00	57			

Note. DORF = Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency.

### **Research Question 2**

Research question 2 examined the effect of repeated reading with pairs of students in a large-group setting on rates of reading fluency growth. Table 8 displays the means, standard deviations, and effect sizes for each grade level and treatment condition. A 2 x 3 ANCOVA (see Table 9) was conducted to test the effect of repeated

Table 8

*Descriptive Statistics for Slope (Reading Fluency Growth)*

Grade	<i>n</i>	Intervention			Control			Effect Size								
		Pretest <sup>a</sup>		Posttest	Adjusted <sup>b</sup>		Pretest <sup>a</sup>		Posttest	Adjusted <sup>b</sup>		partial $\eta^2$	Cohen's <i>d</i>			
		<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SE</i> )	<i>n</i>	<i>M</i>	( <i>SD</i> )	<i>M</i>	( <i>SE</i> )				
2	9	53.22	(14.76)	1.56	(1.48)	2.01	(0.62)	10	66.00	(19.45)	0.17	(1.05)	0.41	(0.52)	---	1.16
3	9	90.00	(15.19)	2.51	(1.68)	2.32	(0.53)	9	95.60	(14.56)	0.54	(1.32)	0.23	(0.56)	---	1.39
4	8	87.75	(23.07)	1.65	(1.11)	1.53	(0.55)	9	85.90	(15.13)	1.78	(2.26)	1.66	(0.52)	---	-0.08
Total	26	77.07	(24.51)	1.92	(1.46)	1.95	(0.30)	28	82.50	(20.61)	0.80	(1.70)	0.77	(0.29)	.14	0.72

<sup>a</sup> Progress monitoring probe #1. <sup>b</sup> Adjusted means are adjusting for the covariate pretest progress monitoring probe #1 = 80.70.

growth, after adjustment for beginning fluency. The dependent variable was the slope, with the first progress monitoring probe serving as the covariate. The omnibus test was nonsignificant,  $F(2, 47) = 2.49, p = .094$ , partial  $\eta^2 = .10$ , indicating no significant interaction between the treatment condition and grade level.

Table 9

*Analysis of Covariance for Slope (Reading Fluency Growth)*

Source of Variation	SS	df	MS	<i>F</i>	<i>p</i>
PM #1	3.84	1	3.84	1.65	.206
Condition	18.17	1	18.17	7.80	.008
Grade level	1.37	2	0.69	0.29	.746
Condition * Grade level	11.60	2	5.80	2.50	.094
Error	109.49	47	2.33		
Total	244.95	54			

Note. PM #1 = progress monitoring probe #1.

There was no significant main effect for grade level,  $F(2, 47) = .294, p = .746$ , partial  $\eta^2 = .01$ , but a significant main effect for condition was found,  $F(1, 47) = 7.80, p = .008$ , partial  $\eta^2 = .14$ , Cohen's  $d = 0.72$ . This indicates that after adjustment for beginning fluency, repeated reading with pairs of students in a large-group setting led to a significantly different slope for reading fluency growth between the treatment conditions, favoring the repeated reading group. The strength of the relationship between repeated

reading and slope, as assessed by partial  $\eta^2$ , was strong with 14% of the variance between the slopes being explained by repeated reading (S. B. Green & Salkind, 2003). Cohen's  $d$ , at 0.72, indicated a moderate to strong effect from repeated reading (Cohen, 1988). There were approximately three-quarters of a standard deviation between the intervention and control groups' slope for reading fluency growth, favoring the intervention group.

Comparison of the means indicates that the intervention group increased the number of correct words per minute (CWPM) over the control group by 1.12 words per week. The second-grade students increased their reading rate by 1.39 words per week, and the third-grade students increased by 1.96 words per week. In contrast, the fourth-grade control students increased by 0.07 words per week over the fourth-grade intervention students. This analysis indicates practical significance and effect for repeated reading with pairs of students in a large-group setting when compared to previous findings for slope (Christ, Silbergliitt, Yeo, & Cormier, 2010; Deno et al., 2001; L. S. Fuchs, Fuchs, Hamlett, Walz, & Germann, 1993; Hasbrouck & Tindal, 2006).

### **Research Question 3**

Research question 3 examined the effect of repeated reading with pairs of students in a large-group setting on comprehension. Table 10 displays the means, standard deviations, and effect sizes for each grade level and treatment condition. The results from the ANCOVA conducted to test the effect of repeated reading with pairs of students in a large-group setting on comprehension, after adjustment for beginning comprehension, are displayed in Table 11. The dependent variable was the GRADE posttest, with the GRADE pretest serving as the covariate. The result was nonsignificant,  $F(1, 52) = 3.34, p = .074$ , partial  $\eta^2 = .06$ , Cohen's  $d = 0.45$ . This indicates that after

Table 10

*Descriptive Statistics for Group Reading Assessment and Diagnostic Evaluation (Comprehension)*

Grade	<i>n</i>	<u>Intervention</u>			<u>Control</u>			<u>Effect Size</u>		
		<u>Pretest</u>	<u>Posttest</u>	<u>Adjusted</u> <sup>a</sup>	<u>Pretest</u>	<u>Posttest</u>	<u>Adjusted</u> <sup>a</sup>	partial $\eta^2$	Cohen's <i>d</i>	
		<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SE</i> )	<i>n</i>	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SE</i> )		
2	9	83.44 (9.73)	87.22 (9.73)	89.28 (1.95)	10	85.30 (15.47)	87.60 (10.58)	88.59 (1.84)	---	-0.04
3	10	95.20 (11.56)	96.20 (7.41)	91.49 (1.93)	9	91.60 (8.58)	89.56 (7.59)	88.03 (1.95)	---	0.94
4	7	88.13 (15.35)	84.71 (10.05)	86.53 (2.21)	10	83.60 (9.34)	80.40 (7.62)	82.37 (1.85)	---	0.53
Total	26	89.19 (13.25)	90.00 (10.01)	89.10 (1.15)	29	86.83 (12.05)	85.72 (9.34)	86.33 (1.08)	.06	0.45

<sup>a</sup> Adjusted means are adjusting for the covariate pretest Group Reading Assessment and Diagnostic Evaluation = 87.02.

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adjustment for beginning comprehension, repeated reading with pairs of students in a large-group setting did not lead to different levels of comprehension between the treatment conditions.

Table 11

*Analysis of Covariance for Group Reading Assessment and Diagnostic Evaluation (Comprehension)*

Source of Variation	SS	df	MS	<i>F</i>	<i>p</i>
GRADE pretest	3005.82	1	3005.82	80.57	< .001
Condition	124.44	1	124.44	3.34	.074
Error	1939.98	52	37.31		
Total	428656.00	55			

Note. GRADE = Group Reading Assessment and Diagnostic Evaluation.

### Summary

This chapter contained a summary and analysis of the statistical testing to answer the research questions introduced in chapter 1. Research question 1 asked: How do the reading fluency skills of students who received repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading fluency, after adjustment for beginning fluency? The ANCOVA indicated that repeated reading with pairs of students in a large-group setting did not have a significant impact on fluency as

measured by the Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF) posttest.

Research question 2 asked: How do rates of reading fluency growth for students who received repeated reading with pairs of students in a large-group setting differ from students who do not in terms of growth in reading fluency, after adjustment for beginning fluency? The analysis found a significant difference in group variance between the intervention group and the control group for rates of reading fluency growth, as measured by slope of reading fluency growth. The students who received repeated reading with pairs of students in a large-group setting demonstrated greater rates of reading fluency growth when compared to students in the control group. This difference was evident for second- and third-grade students; however, the fourth-grade control students showed a mean slope that was 0.07 higher than the intervention students. These differences, when examined by grade level, were not statistically significant.

Research question 3 asked: How do the reading comprehension skills of students who received repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading comprehension, after adjustment for beginning comprehension? The ANCOVA indicated that repeated reading with pairs of students in a large-group setting did not have a significant impact on comprehension, as measured by the Group Reading Assessment and Diagnostic Evaluation (GRADE) posttest.

This study examined the impact of repeated reading implemented with a large group. Statistical analysis indicated that the intervention was effective and meaningful as measured by the slope of reading growth. The intervention did not show a significant difference between groups on either the measure of reading fluency or the measure of

reading comprehension. A summary of the implication of these findings will be reviewed next.



## CHAPTER 5

### SUMMARY

#### **Introduction**

Students are failing to develop acceptable reading skills based on assessment results at the local, state, and national level, yet simply spending instructional time on reading fluency development can increase reading comprehension. Reading fluency is a neglected area of reading instruction; however, research indicates that explicit instruction in reading fluency leads to improved word recognition, reading fluency, and reading comprehension (NICHD, 2000b). Instruction in repeated reading is one method that has been shown to increase reading fluency. Previous work suggests that classroom teachers can develop their students' reading fluency and subsequently increase group achievement scores at the cost of about 15 minutes per day in a structure that can be implemented without undue burden. The purpose of this study was to compare students who received repeated reading with pairs of students in a large-group setting with those who did not in terms of reading fluency, rates of reading fluency growth, and reading comprehension for students at risk for reading failure in a mid-sized Midwestern city.

#### **Summary of Literature**

Poor reading achievement by our nation's students has been documented (Perie et al., 2005) over time. Research to address this problem has indicated that reading fluency is closely related to reading comprehension (Shinn et al., 1992). Although this close

relationship exists, reading fluency instruction has been overlooked in our nation's classrooms (Allington, 1983). Studies have found that instruction in reading fluency increases fluency and comprehension (Therrien, 2004), and that repeated reading is the most often used method to address reading fluency difficulties (Meyer & Felton, 1999).

Several theories have been offered to explain repeated reading's impact on reading fluency and reading comprehension. The theory of automaticity (LaBerge & Samuels, 1974) states that an increase in fluency allows for more attention to be allocated for processing comprehension. The more the student builds his fluency through practice using repeated reading, the more cognitive resources are freed for focusing on comprehension of the text.

Some researchers subsequently wondered if repeated reading of decontextualized word lists would also produce the same impact on fluency and comprehension. Their research indicated that the students became more fluent with reading the word lists; however, this did not lead to an increase in comprehension. They concluded that there was something more at work than just reading words more quickly that contributed to comprehension (Fleisher et al., 1979).

These investigations led to an alternative theory to explain repeated reading's impact on comprehension. Schreiber (1980) put forth the idea that repeated reading increases comprehension because it allows the reader more opportunity to study the syntactic structures of the text. He argued that information regarding the author's intended meaning is lost during reading because prosodic cues of the author's meaning are not as richly present in written text as they are in speech. Repeated reading allows the novice reader to glean as much information as possible about the author's intended

meaning in order to compensate for the loss of information from the absence of prosody. However, Schwanenflugel et al.'s (2004) empirical findings, which suggest that prosody is a by-product of decoding speed and not a mediator of comprehension, weakens Schreiber's position.

Reading fluency is a multifaceted construct that is developing a rich definition. The National Reading Panel defined fluency as "the ability to read a text quickly, accurately, and with proper expression" (NICHD, 2000b, p. 3-5). However, Samuels (2007) argued, "It is the simultaneity of decoding and comprehension that is the essential characteristic of reading fluency. Secondary characteristics of fluency such as speed, accuracy, and expression are indicators, but not the essential characteristics" (p. 564).

The assessment of reading fluency has been conducted in two different ways, reflecting the multifaceted definition of reading fluency. Reading fluency has traditionally been assessed using an accuracy and rate metric, correct words per minute (CWPM) (Meyer & Felton, 1999). Assessment of prosody has also been applied to reading fluency measurement (Dowhower, 1991; Schwanenflugel et al., 2004).

Reading fluency has a close connection and empirical relationship to reading comprehension. Research has continually connected reading fluency to reading comprehension (Hosp & Fuchs, 2005; Shinn et al., 1992), and reading fluency's relationship to high-stakes test scores has been examined (Good et al., 2001; Silberglitt & Hintze, 2005; Wood, 2006).

Repeated reading (Samuels, 1979, 1997) is the act of reading the same section of connected text for either a set number of readings, or until a criterion is met. Repeated reading is not the only method of developing reading fluency; however, it is the most

frequently used (Meyer & Felton, 1999). The purpose of repeated reading is to give the novice reader sufficient practice to develop fluency and comprehension.

Repeated reading has an extensive research base with positive results. Repeated reading has been used as the single intervention strategy to address deficits in reading, and as part of larger instructional packages (e.g., D. Fuchs et al., 2000). A majority of empirical studies of repeated reading have employed a multiple baseline or alternating treatment design. Fewer studies have used experimental (e.g., Homan et al., 1993) or quasiexperimental designs (e.g., Vaughn et al., 2000). The adult-to-student ratio used during repeated reading has been varied, including one-on-one with adults, peer tutors, small groups, and, in a few cases, whole classrooms. Repeated reading has been successful with primary and secondary (Valleley & Shriver, 2003) students, students with and without disabilities (Therrien, 2004), students learning a new language (Taguchi et al., 2004), and with students having sensory impairments (Koenig & Layton, 1998). These positive results have been found with only about 15 minutes of instruction per day (Musti-Rao et al., 2009). Repeated reading is also an intervention that fits within the various tiers of instruction in a response to intervention (RTI) model (Batsche et al., 2006).

### **Research Design**

The intervention and control groups from this pre- and posttest experimental with control group designed study were randomly selected from the subset of students of the population of an elementary school who had failed to reach the DIBELS reading fluency benchmark. The study took place in a school in a mid-sized Midwestern city with 60% of the population being ethnic minorities and 65% eligible for free or reduced-price

lunch. Differences between groups in reading fluency, rates of reading fluency growth, and reading comprehension were examined following a period of repeated reading with pairs of students in a large-group setting.

### **Findings**

This study sought to examine if repeated reading with pairs of students in a large-group setting is able to produce reading fluency and reading comprehension results similar to studies which used individual or small-group structures.

#### **Research Question 1**

This study did not find a mean difference on posttesting for reading fluency, after adjustment for beginning reading fluency, between students who received and did not receive repeated reading with pairs of students in a large-group setting. Research question 1 asked: How do the reading fluency skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading fluency, after adjustment for beginning fluency? The ANCOVA indicated that repeated reading with pairs of students in a large-group setting did not have a significant impact on fluency as measured by the DORF posttest ( $F(1, 54) = .40, p = .529, \text{partial } \eta^2 = .01, \text{Cohen's } d = -0.24$ ).

A potential explanation for this finding is the short duration of the study. The students in the intervention group received repeated reading with pairs of students in a large-group setting for only 7 weeks (average of 28 sessions). The observation of the slope data indicates that it would take three to five times as many weeks to see the students achieve the Dynamic Indicators of Basic Early Literacy Skills (DORF) standards. Significant results in an increase in fluency have been found in as little as

eight sessions in a one-to-one setting (Rasinski, 1990) and 24 to 36 sessions with higher- and lower-skilled peer partners in a classroom (Vaughn et al., 2000).

The present study may not have replicated previous results in fluency development through the use of repeated reading with pairs of students in a large-group setting, but an increase in fluency was none the less demonstrated. The repeated reading group showed a significant difference in slope of reading fluency growth (discussed below in research question 2), which implies an increase in CWPM, even though this was not demonstrated on the DORF posttest.

### Research Question 2

The second research question asked: How do rates of reading fluency growth for students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of growth in reading fluency, after adjustment for beginning fluency? The ANCOVA test for this study found a significant difference between the groups for slope of reading fluency growth, after adjustment for beginning reading fluency,  $F(1, 47) = 7.80, p = .008$ , partial  $\eta^2 = .14$ , Cohen's  $d = 0.72$ . The students who received repeated reading with pairs of students in a large-group setting ( $M = 1.92, SD = 1.46$ ) had a steeper slope than the students in the control group ( $M = 0.80, SD = 1.70$ ). There was also practical significance as seen in effect size, partial  $\eta^2 = .14$ , indicating that 14% of the variance in slope was attributed to repeated reading. This is regarded as a large level of effect in an ANCOVA analysis (S. B. Green & Salkind, 2003). In addition, Cohen's  $d (0.72)$  showed a medium to large effect (Cohen, 1988). There were approximately three-quarters of a standard deviation between the intervention and control groups' slope for reading fluency growth, favoring the intervention group.

Examination of the slope of reading growth by grade level reveals potentially important information. Students who received repeated reading with pairs of students in a large-group setting demonstrated a larger total mean slope, 1.92 correct words per minute (CWPM) per week, than the students in the control group, with 0.80 CWPM (see Table 12). The second- and third-grade intervention students showed a larger mean slope than the control students; however, the fourth-grade control students had a larger mean slope than the intervention students, with a difference of 0.13 CWPM. These results require a comparison to the slope of normally developing readers to give an appropriate context for interpretation.

Table 12

*Comparison of Rate of Fluency Growth to Previous Studies*

	Grade			Total
	2	3	4	
Intervention	1.56	2.51	1.65	1.92
Control	0.17	0.54	1.78	0.80
Christ et al., 2010 <sup>a</sup>	1.02	0.97	0.78	0.87
Hasbrouck and Tindal, 2006 <sup>b</sup>	1.20	1.10	0.90	---
Deno et al., 2001 <sup>c</sup>	1.66	1.18	1.01	---
L. S. Fuchs et al., 1993 <sup>d</sup>	1.46	1.08	0.84	---

<sup>a</sup>Spring season. <sup>b</sup>Students at the 50<sup>th</sup> percentile. <sup>c</sup>General education students receiving typical instruction. <sup>d</sup>Oral passage reading.

Researchers have taken samples of oral reading rate from normally developing readers and readers who have been diagnosed with learning disorders. This has been undertaken to examine what the expected rates of reading fluency growth are. L. S. Fuchs et al. (1993) collected CWPM data from a total of 374 students in Grades 1 through 6 from five Midwestern schools. Deno et al. (2001) gathered similar data from 2,999 students in Grades 1 through 6 from one Midwestern local education agency (LEA), one Southwestern LEA, one upper Midwest LEA, and one LEA in a western mountain state. Christ et al. (2010) collected data from 4,824 students in Grades 2 through 6 in seven Midwestern schools. Hasbrouck and Tindal (2006) collected national oral reading fluency norms in 1992 and 2005. The data in 2005 were obtained from students in Grades 1 through 8 from 23 states. Samples were collected in the fall, winter, and spring. The number of scores collected ranged from a low of 3,496 in the winter of eighth grade to 20,128 in the spring of second grade.

Comparing this study's results to Christ et al. (2010; spring season), Hasbrouck and Tindal (2006; students at the 50th percentile), Deno et al. (2001; general education students receiving typical instruction), and L. S. Fuchs et al. (1993; oral passage reading), the third- and fourth-grade students receiving repeated reading with pairs of students in a large-group setting made greater growth. The second-grade students made comparable growth to Deno et al. and L. S. Fuchs et al., but achieved more growth compared to Christ et al. and Hasbrouck and Tindal. The total fourth-grade students (slope 1.72 CWPM) had a slope 0.94, 0.82, 0.71, and 0.88 CWPM larger than the students in Christ et al., Hasbrouck and Tindal, Deno et al., and L. S. Fuchs et al., respectively, representing 1.95 times greater growth. The intervention third-grade students (slope 2.51



CWPM) also made more progress than the students in Christ et al., Hasbrouck and Tindal, Deno et al., and L. S. Fuchs et al., with 1.54, 1.41, 1.33, and 1.43 more CWPM per week, respectively, approximately 2.32 times greater growth. The second-grade intervention students (slope 1.56 CWPM), with the additional intervention of repeated reading with pairs of students in a large-group setting, made 1.41 times the growth of the students in Christ et al. and Hasbrouck and Tindal, but only made comparable progress to Deno et al. and L. S. Fuchs et al. This suggests that the repeated reading with pairs of students in a large-group setting only enabled the second-grade intervention students to make typical progress. Only when supplemented with intervention did the regular instruction allow this group to make progress comparable to normally developing readers.

The second- and third-grade students in the control group performed poorly in comparison to Christ et al. (2010), Hasbrouck and Tindal (2006), Deno et al. (2001), and L. S. Fuchs et al. (1993). The third-grade students made only as much progress (0.54 CWPM per week) and the second-grade students made less (0.17 CWPM per week) than students who had been diagnosed with a special education disability (Christ et al., 2010; 0.89; Deno et al., 2001; 0.58) and those scoring at the 10<sup>th</sup> percentile (Hasbrouck & Tindal, 2006; 0.70).

This data snapshot indicates that the fourth-grade students in both groups, and the third-grade intervention group, made better progress; the second-grade intervention group made as much progress; and the second- and third-grade control groups made much less progress than typically performing students in reference groups. There was little mean difference (0.13 CWPM) between the fourth-grade groups. Both groups of fourth-grade students began with at-risk status according to the DIBELS standards and made twice the

progress as typical peers when compared to previous studies. Perhaps the fourth-grade students in this study were more advanced, due to either previous experience or current instruction, so that the repeated reading with pairs of students in a large-group setting did not add any value to the students' growth during the time of the study. In contrast, the third-grade controls made little progress, yet with repeated reading with pairs of students in a large-group setting, the rate of progress was more than two times typical growth for the third-grade intervention group. The treatment afforded the second-grade intervention group only typical progress, that which would be expected with typical general education instruction. A potential reason for this lag in progress is that more time is needed for normal progress to surface for the second- and third-grade students in this population; the total fourth-grade performance may support this explanation. Caution in interpretation and generalization of these findings at the individual grade level is warranted due to the small n for each grade level.

It is also possible that the second-grade students in this study lacked the appropriate declarative or procedural prior knowledge in order to benefit from the intervention. The treatment group second-grade students' behavior during the intervention may have influenced their performance on the dependent variable measures. This, in turn, may have had an impact on the statistical tests for the entire group, resulting in a nonsignificant difference between the treatment and control groups for the measures of reading fluency and reading comprehension. A few of the second-grade students, who were reading at the lower levels, had difficulty following the procedures when paired with other second-grade students, who were also reading at lower levels. These students were subsequently paired with older students who were reading at higher levels. Perhaps

this particular group of students, who were randomly selected and assigned from the at-risk subpopulation of second-grade students in the school and who displayed what may be described as immature study skills, was not academically ready for homogenously paired repeated reading with pairs of students in a large-group setting as an instructional method. There was not a significant main effect for grade level ( $F(2, 47) = .294, p = .746$ ) for the 2 x 3 ANCOVA for rates of reading fluency growth, nor was there an interaction for grade level by condition ( $F(2, 47) = 2.49, p = .094$ ); however, as noted above, the second-grade students in the control group made below normal growth, and the second-grade students who received the intervention only made normal growth, when compared to typically performing peers (Christ et al., 2010; Deno et al., 2001; L. S. Fuchs et al., 1993; Hasbrouck & Tindal, 2006). Future research using only second-grade students at risk for reading failure may shed light on this finding.

Another way to interpret this study would be to anticipate how many weeks it would take the students to reach low-risk status (Good & Kaminski, 2002), assuming the intervention had been initiated immediately following the middle of year assessment and the slope had remained constant. The second assumption is questionable because L. S. Fuchs et al. (1993) found that a linear relationship modeled growth over the academic year, but that it was one that was negatively accelerating. The total fourth-grade students showed a slope of 1.72 correct words per minute (CWPM) with a beginning mean CWPM of 80.59. These students would be reading at 111.55 CWPM at the end of 18 weeks of instruction (the end of the school year), at which point the standard is 118 CWPM. Reflecting some regression in skills over the summer months, the beginning of the year benchmark for fifth grade is 104 CWPM. Repeated reading with pairs of

students in a large-group setting, if continued, might allow the students to be on pace to exceed the standard by the middle of fifth grade, at which point the standard is 115 CWPM. The fourth-grade students, who were initially below the benchmark, would have reached the standard some time between 18 and 36 weeks of instruction, the intervention group receiving repeated reading with pairs of students in a large-group setting, and the control group without a significant change in instructional patterns.

The third-grade intervention group would potentially achieve low-risk status sooner than the fourth-grade students. This group's slope of 2.51 CWPM put them on pace to meet the standard within 18 weeks of instruction, showing 118.29 CWPM, with a standard of 110 CWPM. These students could have potentially moved from at-risk status before the end of the school year.

The second-grade students would not have achieved low-risk status as rapidly as the third- or fourth-grade students. The second-grade intervention group showed an improvement trajectory of achieving the standard around 36 weeks, with a slope of 1.56 CWPM. These students would be potentially reading 100.16 CWPM, compared to a standard of 92 CWPM, in the middle of third grade.

These standards (Good & Kaminski, 2002) by which the students' potential for continued growth while receiving repeated reading in a large-group setting are consistent with data from other research. The standards are comparable to Hasbrouck and Tindal's (2006) 50<sup>th</sup> percentile scores, suggesting validity to the figures; they are appropriate standards to which to compare an individual's or group's growth.

### Research Question 3

This study, however, did not find a mean difference on posttesting for reading comprehension, after adjustment for beginning reading comprehension, between students who received and did not receive repeated reading with pairs of students in a large-group setting. Research question 3 asked: How do the reading comprehension skills of students who receive repeated reading with pairs of students in a large-group setting differ from students who do not in terms of reading comprehension, after adjustment for beginning comprehension? The ANCOVA indicated that repeated reading with pairs of students in a large-group setting did not have a significant impact on comprehension, as measured by the GRADE posttest ( $F(1, 52) = 3.34, p = .074, \text{partial } \eta^2 = .06, \text{Cohen's } d = 0.45$ ).

As mentioned above in the discussion of research question 1, a potential explanation for this finding is the short duration of the study. The students in the intervention group received repeated reading with pairs of students in a large-group setting for only 7 weeks (average of 28 sessions). Increases in comprehension have been seen in shorter studies, but standardized measures of general reading comprehension, such as used in this study, may be more resistant to change (Kuhn & Stahl, 2003) in the short-term.

The present study may not have replicated the connection between fluency development and increased comprehension through the use of repeated reading with pairs of students in a large-group setting, but an increase in fluency was nonetheless demonstrated. The repeated reading group showed a significant difference in slope of reading fluency growth, which implies an increase in CWPM, even though this was not demonstrated on the Dynamic Indicators of Basic Early Literacy Skills Oral Reading

Fluency (DORF) posttest. Increased reading fluency generally leads to increased reading comprehension, even though this was not demonstrated on the Group Reading Assessment and Diagnostic Evaluation (GRADE) posttest.

### Summary of Findings

Although no difference in comprehension was found between groups, there was a significant difference for slope of reading fluency growth. This indicates that the students receiving repeated reading with pairs of students in a large-group setting were building their fluency and working toward automaticity. LaBerge and Samuels's (1974) theory of automatic information processing in reading indicates that this increase in reading fluency, as measured in this study by slope (reading fluency growth), is a precursor to comprehension. Examination of developmental theories of reading (Adams, 1990; Carver, 1997; LaBerge & Samuels, 1974; Perfetti, 1985; Wolf & Katzir-Cohen, 2001) and empirical evidence (Deno et al., 2001; L. S. Fuchs et al., 1993) indicates that reading skills follow a developmental sequence. Skills that develop early in the sequence become less evident as being essential for general reading competence as the student becomes a mature reader. The findings of this study, although not showing a significant difference in reading comprehension, did show a difference in slope of reading fluency growth. This may indicate that the participants in the intervention group were accelerating their developmental sequence, but still had ground to cover.

### Limitations

There are some general limitations to this study that must be delineated. This study took place in a single school building in an urban setting with high rates of student mobility, poverty, and poor performance on state English and language arts

accountability assessments. Students in other settings may not respond as the students in this study.

The students came from nine separate classrooms and were removed to a separate classroom for the repeated reading instruction. Combining students for instruction in this manner for a short period of time may have affected the impact of repeated reading.

Repeated reading was the only instructional strategy that took place. It is possible that classroom teachers may not be able to structure time for this method in their classrooms. I was consistently motivated to devote time to the repeated reading instruction in order to fulfill the requirements of this project. Classroom teachers utilizing this format may not be as motivated, or may have other competing interests for their instructional time.

Treatment fidelity is a critical piece of reliability and validity for a study. The fidelity of this study was not formally checked. The extent of assessment of fidelity was the documentation of attendance, the log pages the students used to record their partner's performance for the day, the completed test protocols, and my motivation to complete the study as planned. This motivation, however, does result in an assurance for me that the intervention was conducted in the way outlined in the procedures. Formal plans for treatment fidelity for a study of this nature should be addressed in future research. A study involving intact classrooms would certainly require fidelity checks to be sure the repeated reading with pairs of students in a large-group setting was conducted with integrity.

The external validity of this study could also be questioned. I was the only person involved in the preparation of the materials, the organization of the instruction, the

management of the instruction, and the collection of the data. Additional studies would need to be conducted to ensure that the results of research conducted in this manner are reliable and valid. Replicating the study, having additional researchers with hands-on participation, and using intact classrooms, would help to address external validity issues.

### **Implications for Research**

The literature not only shows a strong relationship between fluency and comprehension (Burns et al., 2002; Dowhower, 1994; Shinn et al., 1992; Therrien, 2004), but it also demonstrates that repeated reading has a strong impact on both fluency and comprehension (Therrien, 2004). This study, however, did not strongly demonstrate the relationship between fluency and comprehension. It did not show a strong impact on both of the measures of fluency, or on the measure of comprehension, through the use of repeated reading with pairs of students in a large-group setting. There are potential reasons to explain this occurrence.

It is possible that there were an insufficient number of intervention sessions to allow repeated reading to show its full effect. This study achieved 32 sessions of repeated reading in a large-group setting, with each student attending an average of 28 sessions. The mean number of sessions in Therrien's (2004) meta-analysis was 36. The repeated reading intervention was continued for 50 sessions in Therrien, Wickstrom, et al. (2006) for improved fluency and comprehension, and for a similar period in others (Bryant et al., 2000; Vaughn et al., 2000) with significant results for improved reading fluency.

Another explanation of this finding is that the length of time that the study spanned may not have allowed it to demonstrate differences in the posttests of fluency



and comprehension that were chosen for the study. There were 14 weeks between the pretesting of Dynamic Indicators of Basic Early Literacy Skills Oral Reading Fluency (DORF) and the posttest, an acceptable period of time between the three-times-per-year assessments of DORF. This would be enough time to detect typical growth during normal instruction, but it may not have been enough time for the intervention to make a difference between groups for these students who began with failure predicting levels of fluency.

The length of time between the pretesting and posttest of the Group Reading Assessment and Diagnostic Evaluation (GRADE) reading comprehension was 10 weeks. The GRADE shows strong test-retest reliability (.89 to .98) for a 2-to-6-week interval for the second- through fourth-grade sample. It is likely that the students would achieve similar scores between the pre- and posttest for this study's time period, which is critical for an assessment such as the GRADE. The strong psychometric characteristics of the test, however, may have worked against the detection of a significant difference between groups. There may not have been enough time during the 7 weeks of the study for sufficient reading growth to take place in order to allow the students in the repeated reading group to demonstrate an increase in reading skills on this measure. The GRADE may not have been sensitive enough for the length of time of this study; this should be considered for future research. Analysis of raw scores on standardized tests of reading comprehension, instead of standard scores based on age or grade level, may yield a more sensitive measure of change in skills (O'Connor et al., 2002).

In contrast, the slope test did show a difference between groups. The progress-monitoring probes on which the reading slope was established consisted of seven data

points collected over 7 weeks. Progress monitoring using curriculum-based measurement has been shown to be sensitive to small amounts of growth in oral reading fluency (Deno, 1985; Marston & Magnusson, 1985; McMaster, Wayman, & Cao, 2006) and may have been a more responsive measure of change in fluency in this study than the DORF posttest. Reliance on the measurement of slope may be a more appropriate choice for studies with a short duration.

Christ (2006) found that 8 weeks of data, assuming two data points per week are collected, are the minimum length of time for an intervention (16 data points). At 7 weeks, with only seven data points, and an average of 28 opportunities for repeated reading instruction, the current study is pressed to meet this practical application guideline for judging the effectiveness of the intervention. The current trend in intervention research and practice (Burns & Gibbons, 2008; Griffiths, Parson, Burns, VanDerHeyden, & Tilly, 2007; Griffiths, VanDerHeyden, Parson, & Burns, 2006; Jimerson et al., 2007; Vaughn & Linan-Thompson, 2003) is to allow sufficient time for students to participate in research-based instruction with adequate progress monitoring before judging the effectiveness of instruction, and subsequently considering changes in instruction.

The large number of students instructed in the small amount of daily time spent using repeated reading with pairs of students in a large-group setting, coupled with the significant and practical findings for rates of reading fluency growth, indicates instructional effectiveness and efficiency. The delivery model that was used for this treatment is simplistic in its organization. It would not require extensive staff development before initiation. There is no need to purchase a special program. A large

number of students showed significantly greater growth in a short amount of time with a relatively small investment of teacher time and resources.

Some may observe that the finer points of fluency, or even the true nature of fluency (Samuels, 2007), were not considered in this study. The method of repeated reading, as used in this study, focused on the number of words read correctly per minute (speed and accuracy of oral reading), and not directly on phrasing and prosody, two indicators that oral reading of text is beginning to reflect spoken language fluency (Dowhower, 1991; Schreiber, 1991). The focus of this study was on readers who were struggling. These readers had beginning reading skills which suggested that they were not on target to meet state proficiency standards for the Indiana Statewide Testing for Educational Progress-Plus (ISTEP+) examination. Once readers such as these are no longer struggling, fluency instruction could be adjusted by shifting the emphasis to appropriate phrasing and prosody. This step would not hinder these struggling readers on toward the goal of fluent reading and reading comprehension. Although prosody was not the direct focus of this study, repeated reading seems to indirectly improve prosody, which may work to improve comprehension (Kuhn, 2005; Musti-Rao et al., 2009). However, teachers and other practitioners ought to be aware that empirical findings may cast doubt on this entire suggestion. Schwanenflugel et al. (2004) found that increased prosody appears to be a by-product of fluent decoding; in addition, only a minimal relationship between prosody and comprehension was indicated. Regardless, it may be in struggling students' best interest to temporarily ignore the complete picture of fluency in order to get them on track to success in reading as soon as possible.

It is important to recognize Samuels's (2007) objections to the use of the term fluency to describe the major focus of this study. He calls the field back to the original meaning of the term as it relates to reading by describing fluency as the simultaneous acts of decoding text and construction of meaning. The essence of fluency is to understand effortlessly. He argues that what DORF and other similar tools measure is oral reading speed, not fluency. Samuels states that the "secondary characteristics of fluency such as speed, accuracy, and expression are indicators, but not the essential characteristics" (p. 564). Samuels expresses concern that teachers and students will misunderstand the nature of reading fluency if the assessment of it encourages the student to read quickly, disregarding the construction of meaning.

The measure of fluency used in this study may historically be more accurately labeled oral reading speed; however, as Samuels states, it is a indicator of reading fluency, which in turn is an indicator of reading comprehension. The entire field, including scholars, researchers, teachers, and students, must recognize that fluency, as defined by DORF, is like taking your child's temperature (Hasbrouck & Tindal, 2006) when she is ill. It will not necessarily fully describe the condition precipitating the fever, or even prescribe the most effective treatment, but it nonetheless indicates that something is wrong. And when we know in a highly reliable manner that something is wrong, we have no excuse in ignoring the situation.

### **Recommendations for Further Research**

The review of the literature found that four of the 19 studies examined employed an experimental design for the inquiry into repeated reading's impact on fluency and comprehension. This study helps to increase that ratio. The literature contains sufficient

theory and exploratory studies to support a scaling up of efforts to continue the documentation of more conclusive evidence for repeated reading's effectiveness by using the experimental study. Experimental studies examining repeated reading in large groups of students are ready to be supported. If repeated reading is an easy, efficient, and effective strategy for reading instruction, as this study and the rest of the literature supports, the field should confirm this finding with large-scale studies and publication of the findings.

There are many other facets of repeated reading that could be studied. Future studies of repeated reading in large-group settings should consider lengthening the time well beyond 7 weeks to see if significant differences are found on three-times-per-year reading fluency assessments and group-administered standardized measures of reading comprehension. Assessing repeated reading's impact on mandated high-stakes tests would also be beneficial to the field. Training teachers to use large-group repeated reading, and then assessing treatment integrity, would continue the exploration of the effectiveness of the use of repeated reading within intact classrooms (Musti-Rao et al., 2009). This would further the goal of increasing the more efficient use of repeated reading.

The use of intact classrooms and decentralization of the intervention site would also be appropriate areas for research. This would continue the trend of researching the application of repeated reading in a more naturalistic setting. This type of setting would also eliminate the use of 5 to 15 minutes of transition time, which was necessary to pick students up from their classrooms, escort them to the room used for repeated reading, and then return them to their classrooms following the conclusion of that day's instruction.

Another step in future research would be comparing buildings that are using repeated reading in most or all of the classrooms to buildings in the same school district, or in districts with comparable demographics, which are not using repeated reading. As whole districts move toward the use of repeated reading in their classrooms, districts' performance on group tests of achievement used in common, or state accountability tests, could be used as the comparison of performance between similar school districts.

### **Implications for Practice**

Repeated reading with pairs of students in a large-group setting fits into the instructional management philosophy of response to intervention (RTI; Batsche et al., 2006; Jimerson et al., 2007). RTI is a system of instruction designed to progressively increase support for students who are not meeting standards for learning. The first level of support, or tier, is the use of effective general instruction for all students. School personnel are encouraged to use curriculum that has been shown to be effective for a majority of students, and to monitor the progress of all students. The second level consists of intensive small-group instruction targeted at students who are not meeting the standards. Methods are again chosen that are known to be effective for most students. Students who continue to struggle receive individualized intervention at the third level. A student may be referred for a special education eligibility evaluation if he either does not respond to these attempts to provide supportive instruction, or if it is determined that he can only make progress when provided with the third level of support.

The data from this study are potentially important in an RTI framework for two reasons: (a) repeated reading with pairs of students in a large-group setting was an effective intervention and (b) it takes time (anticipated from the current data to be at least

18 to 36 weeks) to see a turnaround in performance for students who began at risk for reading failure.

Repeated reading used within an RTI framework could be an appropriate tier-one instructional technique. Tier-one techniques should consist of research-based instruction that has been shown to be effective with most students. Moreover, Burns and Gibbons (2008) discussed the importance of identifying classwide problems and utilizing a classwide intervention as the first step in the intervention process. Based on the current data, repeated reading could serve as a classwide intervention for low-performing classrooms of students.

Repeated reading is also potentially useful at the second tier of an RTI system. Schools employing an RTI framework utilize universal screening in order to monitor the progress of all students (Batsche et al., 2006). Schools that monitor the progress of students who are participating in repeated reading with pairs of students in a large group during tier-one instruction may discover candidates for repeated reading at tier two. These candidates would be students who are not showing appropriate growth despite the use of repeated reading. Repeated reading instruction at tier two could take place in medium- to small-sized groups in order to focus effective instruction on students who struggle even after research-based instruction has been utilized in the classroom.

Students who continue to struggle with reading fluency and comprehension after quality tier-two instruction with repeated reading could be potential candidates for tier-three instruction utilizing repeated reading. A student may respond to repeated reading if implemented in the traditional format of one adult working with one student. This would provide a high-quality instructional technique with a high degree of adult attention.

The present research shows that as a group the students who received repeated reading with pairs of students in a large-group setting had a significantly steeper slope of reading fluency growth than students who did not receive repeated reading. Although the group made significant growth, examination of the raw data indicates that not all individuals made progress that would lead them down the road of improved reading performance. A quality system of RTI would identify these students for early intervention in order to improve their chances for success in reading.

A suggested plan for using repeated reading within an RTI framework follows. Repeated reading in a large group could be used in each classroom three times per week beginning in the second grade. Schools employing RTI would be utilizing universal screening at least three times per year, with beginning, middle, and end-of-the-year assessments. Students who score below the standard at the beginning of the year would receive progress monitoring two times per week for the first 10 weeks of school. This would provide 20 data points on which to evaluate the effectiveness of the whole group instruction. The slope of the data points could be inspected to determine if the student is maintaining a slope which is on track to meet the middle-of-the-year standard. Students who do not achieve or maintain an appropriate slope would receive additional repeated reading instruction in the classroom five times per week in a learning center format. This would provide additional practice with repeated reading without expending a significant amount of resources. Progress monitoring would continue at two times per week until the middle-of-the-year assessment. Students who continue to be below the standard and who are maintaining a slope which makes it unlikely for them to attain the end-of-the-year standard are candidates for tier-two instruction. Repeated reading at this level could



take place in a medium-sized group setting in a separate classroom with students from other classrooms who also struggle. Students who continue to show an inadequate slope for reading growth may be candidates for other tier-two interventions, or a tier-three intervention utilizing repeated reading in a one-on-one setting.

### **Conclusions**

This study supports the following conclusions. The theory of automaticity as applied to reading development is supported by the results. Reading fluency is an important component of reading instruction and requires the allocation of only a few minutes of daily instruction (NICHD, 2000b). Repeated reading is an effective method to develop reading fluency and reading comprehension in readers who are at risk for reading failure (Therrien, 2004). Past researchers have implemented repeated reading with one adult and one student (Samuels, 1979, 1997; Therrien, Wickstrom, et al., 2006), one adult and four students (Begeny & Silber, 2006), in classrooms during independent reading using heterogeneous pairs (Algozzine, Marr, Kavel, & Dugan, 2009), and during teacher-directed whole-class instruction using heterogeneous pairs (Mathes et al., 1998). This study extended previous research using a pre- and posttest experimental with control group design by demonstrating the effectiveness of repeated reading with pairs of students in a large-group setting with a group of students who ranged from second to fourth grade, who were all below their respective DIBELS standard, pulled out together into a separate classroom, and organized into homogeneous pairs. The students received the intervention for 15 to 20 minutes per day, 3 to 4 days per week, for 7 weeks. This was done under the management of one adult. This study demonstrates that one adult was able to facilitate the development of reading fluency with a classroom of students

who are below standard. A classroom teacher would not require much training, as in a program such as peer tutoring, to implement repeated reading in a large-group setting. This intervention also would not require extensive infrastructure or local leadership (both necessary for a systems change to a response to intervention format) for support. A motivated teacher who recognizes the need for improved reading performance in her students could see a change in as little as one academic quarter with only a few simple supplies and a small part of the day.

The state of reading skills among America's youth is troubling. Oral reading fluency is one important component in the complex system of reading. It is highly related to reading comprehension, but has been conspicuously absent from many classrooms. This inquiry found that repeated reading with pairs of students in a large-group setting, similar to many classrooms, was shown to be an effective and efficient way to increase oral reading fluency.

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- 1992 Education Specialist, School Psychology, Ball State University, Muncie, IN
- 1990 Bachelor of Arts, Psychology & Business Administration, Grace College, Winona Lake, IN

### Educational Licenses and Certifications

School Psychologist, Indiana Professional Standards Board

### Higher Education Professional Experiences

Indiana University South Bend

- 2010 Introduction to Research P503, Graduate
- 2008 Assessment in Schools P507, Graduate
- 2008 Psychology in Teaching P510, Graduate
- 2006-2007 Psycho-educational Assessment of Exceptional Children P519, Graduate
- 2006 Instructional Evaluation in Special Education K577, Graduate
- 2005 Practicum Seminar: Management of Instructional Objectives in Special Education K575, Graduate

### K-12 Professional Experiences

- 2000-present School Psychologist, South Bend Community School Corporation
- 1992-2000 School Psychologist, Goshen Community Schools
- 1991-1992 School Psychologist Intern, Michigan City Area Schools

### Scholarly Activities and Research

- Burns, M. K., Tucker, J. A., Frame, J., Foley, S., & Hauser, A. (2000). Interscorer, alternate-form, internal consistency, and test-retest reliability of Gickling's model of curriculum-based assessment for reading. *Journal of Psychoeducational Assessment*, 18, 353-360.
- 2005 Instructional Consultation Summer Training Institute, \$8550 grant funded by the Public Education Foundation
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