

THE EFFECTS OF CROSS-AGE TUTORING ON THE  
READING ABILITY OF FIRST AND  
SECOND GRADE STUDENTS

by

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Dedicated to my students at Gateway School who  
forever changed the course of my life and made  
me the teacher I am today.

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## ABSTRACT

The positive effect of early intervention upon the reading abilities of struggling students has been well documented by research. Unfortunately, the current economic situation has eliminated the positions of many interventionists serving in school districts across the country. Cross-age tutoring has been implemented in many places as a replacement when adult tutors are not available. This study utilized six highly trained and supervised high school students to provide structured reading tutoring to 13 first and second grade students who were performing below benchmark on reading assessments. Tutoring focused upon the word reading aspect of reading instruction, including both decoding and sight word instruction using a structured, systematic phonics curriculum. Tutoring was provided during the school day for 30 minutes three times a week for a total of nine weeks. Post intervention comparison to a control group using ANCOVA, with pretest as the covariate, found significant positive effects of tutoring upon the outcome measures of both word attack and word identification, though not for reading comprehension. In addition to examining tutee outcomes, tutor fidelity was assessed to ensure precise implementation. Surveys and interviews were also conducted with all participants (i.e., teachers, tutors, and tutees) and a majority of responses were positive, indicating approval with the intervention. Participant suggestions are also discussed as well as possibilities for future research.

## TABLE OF CONTENTS

LIST OF FIGURES .....	vii
LIST OF TABLES .....	viii
CHAPTER ONE: INTRODUCTION .....	1
History of Reading Legislation .....	2
Purpose of the Current Study .....	9
Delimitations .....	11
Definitions .....	12
Summary and Conclusions .....	14
CHAPTER TWO: LITERATURE REVIEW .....	16
Effects of Tutoring .....	19
Cross-Age Tutoring .....	24
Justification for Cross-Age Tutoring .....	25
Benefits of Cross-Age Tutoring .....	31
Fidelity of Implementation .....	51
Summary of Literature Review .....	53
Statement of the Problem and Purpose for the Current Study .....	54
CHAPTER THREE: METHODOLOGY .....	57
Participants .....	58
Materials .....	62
Procedures .....	66
Data Analysis .....	69
CHAPTER FOUR: RESULTS .....	74
Word Reading Ability .....	76
Comprehension Ability .....	85
Fidelity of Implementation .....	85
Social Validity .....	86
CHAPTER FIVE: DISCUSSION AND CONCLUSIONS .....	91
Study Summary .....	91
Discussion and Interpretation of Findings .....	93
Cost Effectiveness of Intervention .....	100
Limitations .....	102
Suggestions for Further Research .....	104
Summary .....	105
REFERENCES .....	106

APPENDICES .....	117
Appendix A: Example of Concept Mastery Probe .....	118
Appendix B: Participant Surveys .....	119
Appendix C: Fidelity Checklist & Self-Checklist .....	124
Appendix D: Survey Responses .....	129
Appendix E: Scope and Sequence .....	136
Appendix F: IRB Permission Letter .....	137

## LIST OF FIGURES

	Page
Figure 1 <i>Mean score differences on WRMT-III word attack</i>	78
Figure 2 <i>First grade word attack progress monitoring</i>	79
Figure 3 <i>Second grade word attack progress monitoring</i>	80
Figure 4 <i>Mean word attack progress monitoring slopes</i>	81
Figure 5 <i>Mean score differences on WRMT-III word identification</i>	82
Figure 6 <i>First grade word identification fluency</i>	83
Figure 7 <i>Second grade word identification fluency</i>	84

## LIST OF TABLES

	Page
Table 1 <i>Overview of Documents Examined for Literature Review</i>	32
Table 2 <i>Pre and Post test Means and Standard Deviations for Raw and Standard Scores for WRMT-III Subtests and PPVT-IV</i>	75
Table 3 <i>Adjusted Post-Test Means for WRMT-III Subscale Raw Scores Using Pre-Intervention Scores as a Covariate</i>	77
Table 4 <i>Tutor Fidelity by Percent</i>	86
Table 5 <i>Cost Analysis Comparing Regular Intervention to Cross Age Tutors</i>	102



## CHAPTER I

### Introduction

Learning to read is one of the most crucial skills that children must acquire if they hope to be successful in life (Lyon, 1995). Children who fail to acquire the fundamental skills early in life rarely catch up to their peers (Stanovich, 1986). This failure in learning to read often follows these students throughout their lives and continues to cause problems. Seventy-five percent of students who drop out of high school report reading problems as a contributing factor (*Hearing on Measuring Success: Using Assessments and Accountability*, 2001). Similarly, at least half of adolescents with criminal records and substance abuse problems have reading difficulties (*Hearing on Measuring Success: Using Assessments and Accountability*, 2001). Because of the long term effects that reading difficulties have upon the lives of children and adults, the National Institute of Child Health and Human Development (NICHD) classified this issue as a national health problem (*Hearing on Measuring Success: Using Assessments and Accountability*, 2001; Lyon, 1995).

Classifying the state of reading as a national health problem led to several decades of legislation that now governs the decision-making processes of schools. The next pages outline a history of reading legislation that explain why it is critical that programs implemented in schools meet the rigorous standards of scientifically based instruction. Additionally, a brief overview is provided regarding the effectiveness of supplementary instruction provided by paraprofessionals, tutors, and other students. The purpose of the current study is to add to the body of

research regarding cross-age tutoring in order to help classify it as scientifically based so it may be considered a viable option for providing supplementary instruction to struggling students.

### **History of Reading Legislation**

The value of scientifically based decision-making has long been a part of the scientific community and the careers associated with it, such as psychology and medicine. Though the field of education has lagged behind these other fields in this respect, the concept has been consistently emphasized throughout the last two decades (McCardle & Miller, 2009). In the early 1990's the NICHD with Dr. G. Reid Lyon at the head, began reporting to Congress the findings of over 30 years worth of reading research. This testimony all pointed toward the need to incorporate scientifically based research in the decision-making processes of schools and education agencies. Throughout this testimony, Dr. Lyon emphasized the need for phonics-based instruction to return to the classrooms in the United States (*Hearing on Measuring Success: Using Assessments and Accountability*, 2001).

The severity of the nation's reading problem was brought to the attention of the public in 1996 when President Clinton announced in his State of the Union Address that 40% of fourth-grade students could not read at grade level (Clinton, 1996). This announcement brought the problem to the attention of the federal government and led to a series of laws and initiatives whose goal was to substantially reduce or eliminate this deficit. In the end, these initiatives resulted in

schools requiring that programs being implemented in classrooms must be validated by scientific research.

As a result of Lyon's testimony (*Hearing on Measuring Success: Using Assessments and Accountability*, 2001), along with the disheartening results of the National Assessment of Education Progress (NAEP) showing that no improvement had been made in reading achievement over the past decade (National Council for Education Statistics [NCES], 2009), President Clinton signed the Reading Excellence Act (REA) into law (REA, 1998). This law dedicated billions of dollars to the task of providing teachers and administrators with the most up-to-date research in the field of education as well as help to purchase curriculum and assessments that were considered *scientifically based reading instruction* (SBRI). As defined in the REA (1998), scientifically based reading research (SBRR) means that all programs must first be subjected to rigorous, high quality research to determine its effectiveness. The data collected must be examined in an empirical, replicable method and finally, the information must be accepted by a panel of experts in a peer reviewed journal.

Following in the footsteps of this legislation, the Department of Education and Health and Human Services asked the National Academy of Sciences for a report on the development and instruction of reading (McCardle & Miller, 2009). The product of this research was *Preventing Reading Difficulties in Young Children* (Snow, Burns, & Griffin, 1998). In this report, the authors recommended the use of explicit phonics and decoding instruction along with reading fluency and comprehension strategies. The panel recommended providing teachers with high

quality training through teacher education programs and professional development in an effort to ensure they clearly understand how students learn to read and feel qualified to instruct them.

Though the report from the National Academy of Sciences outlined what was necessary for students to learn to read, it did not specifically address the topic of methodology. In an effort to address this issue, Congress called for the NICHD to put together a panel to determine the research-base in education and the most effective forms of teaching reading (McCardle & Miller, 2009). Thus, the National Reading Panel (NRP) was formed. In 2000, the panel presented its findings that, indeed, all children could effectively be taught to read if teachers were provided with the knowledge and materials necessary. According to the NRP, the important components include, explicit, systematic instruction in phonemic awareness, phonics, fluency, vocabulary and comprehension (NRP, 2000).

Upon taking office, George W. Bush clearly stated that the number of students in U.S. schools who were unable to read was unacceptable (Bush, 2001). On January 28, 2002 he signed the *No Child Left Behind Act of 2001* (NCLB). This legislation required the implementation of materials and methods based on scientific evidence as well as outlining accountability measures to ensure students were making progress (NCLB, 2001). In an effort to encourage schools to adopt materials that conform to SBRR, the Reading First bill was created to provide federal grants to states that were willing to change their materials to those validated by science (NCLB, 2001).

All of the laws addressed above sought to change the educational landscape by encouraging the implementation of methodologies and materials backed by science. With NAEP scores remaining virtually unchanged since its implementation in the 1960s, legislators have taken it upon themselves to try to implement accountability measures in an effort to increase achievement. Teacher accountability is increasingly dependent upon student achievement. Many states are implementing third grade retention laws, which state that students cannot be advanced to the next grade without demonstrating an ability to perform at a basic level in reading skills (S. 1776, 2011). These legislative efforts only increase the pressure to ensure achievement for all students and early intervention becomes even more important. With over 20 students in the average classroom, it is impossible for classroom teachers to provide the amount of additional instruction these students need to raise their achievement to grade level. In an effort to support teachers in this goal, districts employ paraprofessionals and reading tutors to increase the instructional time provided to each struggling student.

**Paraprofessionals and reading tutors.** Employing non-certified personnel to provide additional assistance to struggling students has become commonplace in schools. The U.S. Department of Education reports over 700,000 instruction aids or paraprofessionals employed in American schools (NCES, 2012). Paraprofessionals provide many services in schools, from assisting students with special needs, to providing one-on-one and small group instruction. Research has shown that, given the proper training and support, paraprofessionals can be quite successful in

providing this additional instruction (Vadasay, Sanders & Peyton, 2006; Vadasay, Sanders & Tudor, 2007).

Another solution to provide additional instruction time for students has been to provide reading tutors. The most well known initiative of this type was the America Reads Challenge (H.R. 1556, 1997). In his 1996 State of the Union Address, President Clinton challenged Americans to volunteer as reading tutors. Universities accepted the challenge and began sending their work-study students to local elementary schools to work with struggling readers. While research has indicated that tutoring *can* be beneficial for students (Cohen, Kulik & Kulik, 1982; Slavin et al., 2011), there is debate as to the type of instruction that should be provided. Snow, Burns, and Griffin (1998) acknowledged that tutors could be valuable in motivating students and providing practice opportunities, but cautioned that that they should not be the main source of intervention for students, particularly those with significant challenges, but rather certified personnel should work with those students.

While it is acknowledged that highly trained instructors are most likely the best option, continuous budget cuts do not always allow for the number of certified personnel necessary to provide this intervention. The Center for Budget and Policy Priorities (2012) reports that in many states spending per student has been cut as much as 21.8% since 2008. With these budgetary constraints it is not always possible to pay for this type of highly skilled interventionist. Instead, districts must

begin to look within their infrastructure to try to solve the problem of increasing instruction time.

**Peer and cross-age tutoring.** One solution to the shortage of certified instructors has been to use students to tutor each other. Both peer tutoring and cross-age tutoring have been implemented in classrooms in an effort to raise the reading achievement of students (Fuchs, Fuchs, Mathes & Simmons, 1997; Glaser, 2002). Peer tutoring refers to tutoring carried out by students within the same grade, while cross-age tutoring refers to tutoring by older students (Gaustad, 1993).

The most well-known peer tutoring program is Peer Assisted Learning Strategies (PALS) (Fuchs et al., 1997). In this intervention, students work one-on-one or in small groups helping each other sequence stories, find the main idea and generate predictions. This format of peer tutoring has been implemented in classrooms across the country with success. In response to the success of PALS, peer and cross-age tutoring has been adapted to work with a variety of skills including letter naming (Guy, 2001), decoding (Davenport, Arnold & Lassman, 2004), fluency (Glaser, 2002), and comprehension (VanKeer, 2004).

There are several advantages to implementing peer and cross-age tutoring in classrooms. First, students who participate in these programs are given additional chances to interact with the material they are learning in class. It is often difficult to ensure that all students are given practice opportunities during full-class instruction and thus, small groups allow for each student to interact with the material. These

small groups also allow for reinforcement of concepts learned and consistent feedback and correction.

The second advantage to implementing peer and cross-age tutoring is that the teacher is able to provide assistance to more students at once than is possible through one-on-one instruction. By acting as the facilitator rather than the interventionist, the entire class can benefit from the intervention time, rather than having some students waiting while the teacher works with a small group.

An additional advantage to cross-age tutoring is that gains can be seen not only in the tutee, but also the tutor. Many intervention studies recruit tutors with learning disabilities, or at least those who are behind in reading themselves (Labbo & Teale, 1990; VanKeer, 2004). As these tutors work to increase the skills in their tutees, they learn the information themselves and in many instances make academic gains equal to or greater than their students.

All of these advantages have led to the increase of schools, as well as other organizations, utilizing peer and cross-age tutors. Programs such as the *Willamette High Peer Tutoring Program* in Oregon and the *Coca-Cola Valued Youth Program* in Texas (Anderson, 2007) and Big Brothers and Sisters (Healy, 2012) have brought this type of instructional format to the attention of the public. However, though a considerable amount of research has been carried out on this topic, it has not been extensive enough or methodologically rigorous enough to meet the standards of SBRR. With the current legislative climate requiring interventions to meet SBRR



standards, continuing research in these types of programs is important if schools wish to receive funding and support for their implementation.

The current research has also not examined the extent to which cross-age tutors can be utilized in schools. Across the literature, cross-age tutoring programs have been implemented so that groups of high school students go into a classroom or classrooms at a specific time and work with students. This is usually done as part of a class project for the high school tutors. With the decrease in school funding and the cutbacks in support personnel in schools, it becomes important to find alternate means of providing the services previously provided by paraprofessionals. This study examined whether high achieving high school students could be utilized during their free periods to fill the role vacated by paraprofessionals. Tutees were students whose fall benchmark scores on DIBELS (Good & Kaminski, 2002) placed them below the 40<sup>th</sup> percentile in reading and were considered at risk for reading failure. These students were pulled from their classrooms to work with a tutor in place of independent seatwork during reading groups, as this is the preferred format for intervention provided by paraprofessionals. The high school students, under the oversight of the researcher, provided tutoring to these students three times a week. By utilizing this format, schools could provide multiple intervention groups while only needing one paid professional for supervision, rather than many.

### **Purpose of the Current Study**

The primary goal of this research study was to examine whether high school students can be recruited to help fill the role of interventionists in elementary

schools. As school districts strive to reach state and federal accountability levels with fewer funds, it will become more and more important to have scientifically validated options to provide supplementary instruction. Four research questions were examined in an effort to determine the effectiveness of this type of intervention format:

1. To what degree does reading tutoring delivered by high school students increase the word reading abilities of elementary students as compared to a control group?
  - a. *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in word reading as measured by word attack and word identification skills.
2. To what degree does reading tutoring delivered by high school students increase the comprehension abilities of elementary students as compared to a control group?
  - a. *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in comprehension.
3. What level of implementation fidelity can high school students achieve when tutoring struggling readers using a structured/scripted curriculum?
  - a. *Hypothesis:* High school students will be able to achieve 90% implementation fidelity as measured by the Fidelity Checklist.
4. Is the tutoring format acceptable to tutees, tutors and school personnel?

- a. *Hypothesis:* When examining percentages on exit surveys completed by tutees, tutors and school personnel, it is expected that 80% of responses will indicate acceptance by participants.

### **Delimitations**

In an effort to succinctly answer the above stated research questions and with the understanding that all supervision would need to be provided by the researcher, the following delimitations were established to narrow the scope of the study and make supervision more manageable. The study ran throughout the fall semester of 2012 with testing beginning in September, and tutoring running from October through December 2012. The location selected was a single school in a small district in Middle Tennessee. This school was selected based on administrator and teacher support for the project as well as flexibility in scheduling. Tutors were selected from high school juniors and seniors who met the selection criteria for the study. The selection criteria for this study were as follows a) a minimum 3.0 GPA b) a recommendation for an administrator, teacher, or school counselor c) room in their schedule to spend three afternoons a week in the elementary school. Tutees were selected from nine first and second grade classrooms within the elementary school. Selection criteria for tutees were as follows a) performed below benchmark on the fall *DIBELS* benchmark. Performing below the 40<sup>th</sup> percentile is considered below benchmark b) not already be served under an IEP or 504 plan c) have a teacher recommendation. Finally, only the outcomes of decoding and comprehension were measured for this study. While it is acknowledged that

reading is a complex, multifaceted process, the initial study will only examine these two aspects of reading development. While these boundaries, particularly of time and location, narrowed the scope and generalizability of the study, they were necessary in order to make the study manageable for the oversight of a single supervisor.

### **Definitions**

The following definitions will be helpful in assisting the reader in interpreting the study.

- *At-risk student* - Students who score below benchmark on their fall *DIBELS* assessment but have not been qualified for special education services.
- *Classroom teacher* - The teacher to whom the tutees were assigned on a daily basis. These teachers nominated students based on their fall benchmark scores and were responsible for the student's overall achievement.
- *Cross-age tutoring* - A tutoring format where both tutor and tutee are students, but the tutor is older than the tutee.
- *Paraprofessional* - A non-certified school district employee who is hired as support staff to help perform many of the duties of certified personnel such as providing small group instruction. These staff members generally receive some training and ongoing support.
- *Peer tutoring* - A tutoring format where the tutor and tutee are the same grade/age.

- *Scientifically Based Reading Instruction* – Reading instruction that has been developed based on research that meets the standards of SBRR. This can refer to instructional routines as well as curriculum.
- *Scientifically Based Reading Research (SBRR)* – According to *No Child Left Behind*, SBRR is research that applies, systematic, rigorous and objective procedures to determine the validity of a finding (NCLB, 2001).
- *Structured program* – Structured instruction refers to instruction during which the time is explicitly outlined and contains specific lessons and materials to be used during each session (Ritter et al., 2009).
- *Supervisor* – The trained adult responsible for oversight of tutors during the tutoring sessions. In this case, the researcher.
- *Tutee* – Elementary students in grades one and two who are receiving tutoring.
- *Tutor* – High School student who provides tutoring to the tutees three times a week at the elementary school.
- *Tutoring* – The practice of providing small group instruction to students who are behind in reading in an effort to improve their reading achievement.
- *Volunteer tutor* – Community members who volunteer their time to provide additional instruction to struggling students. In this study, volunteer tutors refer to college students and adults. High school students are considered cross-age tutors.

## **Summary and Conclusion**

Over the past several decades, the state of reading education has been an important topic not only for educators, but also for lawmakers. As NAEP scores remain relatively flat, legislators have begun to pressure districts to increase reading scores through the implementation of accountability measures and, in some cases, retention of underperforming students. However, most districts are also encountering consistent budget cuts, which limit the number of certified personnel that can be hired to work with students. In the past, instruction has been supplemented through the use of paraprofessionals. Research has clearly indicated that paraprofessionals can improve the reading skills of students (Slavin et al., 2011; Vadasay et al., 2006; Vadasay et al., 2007). However, many districts, like the one participating in this study, have eliminated many of these positions as well due to the lack of funding. Because of this, it is important for schools to begin looking at alternative sources of intervention, such as peer and cross-age tutoring. This study examined a body of work looking specifically at cross-age tutors and then examined the feasibility of utilizing high school students to fill the voids left by paraprofessionals.

The remainder of the study is organized into four chapters, a bibliography, and appendices. Chapter 2 presents a review of the literature surrounding supplementary reading instruction. It begins with an overview of several meta-analyses that examined the effectiveness of supplementary instruction provided in varying formats and by various instructors, including teachers, paraprofessionals,

volunteers, and students. Chapter 3 outlines the methods and procedures used for the study. An analysis of the data is presented in Chapter 4 and Chapter 5 presents a discussion of the results and recommendations for further study. The study concludes with a bibliography and appendices containing a timeline and various tools created for or used in the study.

## CHAPTER II

### Literature Review

Learning to read is a critical skill for success both in school and society. Yet, according to the National Assessment of Education Progress (NAEP), in 1992, 40% American fourth graders read below a basic level (National Center for Education Statistics [NCES], 1992). As a result of these statistics, national education agencies and government bodies worked to address the problems, calling for both remediation and prevention services. In 1995, the National Institute of Child Health and Human Development (NICHD) called the problem a “national health issue” (Lyon, 1995). Unfortunately, despite numerous policy changes aimed at correcting the problem, in the 20 years since that finding these numbers have only improved by six percent, leaving 34% of the nation’s fourth graders still reading below a basic level (NAEP, 2011). On an international evaluation of fourth grade reading scores, the United States scored sixth, falling behind Hong Kong, the Russian Federation, Finland, Singapore and Northern Ireland (Progress in International Reading Literacy Study [PIRLS], 2011).

As part of the efforts to change this trend, researchers have searched for critical aspects of reading instruction; factors that improve student outcomes. One of the most important factors to emerge was the importance of early intervention. As early as 1988, Juel’s research indicated that first graders identified as poor readers had an 88% chance of remaining poor readers in the fourth grade. Good, Simmons and Smith (1998) examined the reading trajectories of second grade



students in the 10<sup>th</sup> and 50<sup>th</sup> percentiles at the beginning of the school year and found that the rate of growth for average readers was significantly higher than that of poor readers. In fact, their results were that poor readers would have to increase their reading skills at double the rate of their peers in order to read at grade level by the end of the year. This information indicated that when students begin second grade behind their peers, the chances that they will catch up by the end of the year are very slim.

According to Stanovich (1986), this is known as the “Matthew Effect” in reading. Taken from a line in the Bible referencing the concept that the rich get richer while the poor get poorer, Stanovich compared this to the effects of falling behind in reading. Children who learn to read quickly and easily have more exposure to print and progress rapidly in their reading development, while children who struggle from an early age continue to fall further and further behind their peers, making it less likely they will catch up. The Matthew Effect, along with the research from Juel (1988) and Good, Simmons, and Smith (1998), emphasizes the importance of early intervention to ensure that children have early success with reading.

Early intervention becomes even more important when viewed through the lens of increasingly stricter legislation regarding the achievement of students. In an effort to enforce accountability and increase student success rates, many states are implementing social promotion laws (S. 1776, 2011). These laws are generally targeted at third grade students and state that if a student is performing

significantly below grade level at the end of the school year, they must repeat third grade. Many retention studies have indicated that retention of students at this age can be damaging to their self-esteem and lead to students dropping out later in life (Jimerson, Anderson & Whipple, 2002). Early intervention can potentially be the key to eliminating the deficits that could later lead to grade retention due to these laws.

Early reading interventions are accomplished in many ways in schools across the United States. One of the most common ways of implementing these interventions is with the use of paraprofessionals. Numerous research studies have examined and validated the effects that paraprofessionals and other community volunteers can have on the reading achievement of struggling students (Spear-Swerling, 2009; Vadasay, Sanders, & Peyton, 2006; Vadasay, Sanders, & Tudor, 2000). Some researchers argue that highly trained teachers provide the highest gains for students (Slavin, Lake, Davis, & Madden, 2011), however, the studies by Vadasay et al. (2006, 2007) and others (Juel, 1991; Spear-Swerling, 2009) have demonstrated that paraprofessionals and other adults can help struggling students through supplementary instruction such as tutoring. Additional studies have indicated that adults are not the only ones who can be successful in raising reading achievement in struggling readers. A number of studies have found positive effects when implementing student-to-student tutoring (e.g. Fuchs & Fuchs, 2005; Glaser, 2002; Van Keer, 2004). Due to the great variety in tutoring programs that have been implemented with varying degrees of success it is important to examine the most

effective components of successful tutoring programs in an effort to learn from what has already been done.

### **Effects of Tutoring**

Several meta-analyses have been completed to examine the various effects that tutoring has upon struggling readers. Tutoring refers to the act of providing supplementary instruction, in this case to children who are achieving below grade level. In 1982, Cohen, Kulik and Kulik completed one of the first meta-analyses on this type of instruction. Since then, many similar analyses have been completed including Elbaum, Vaughn, Hughs and Moody's (2000) analysis of one-to-one tutoring programs, a general review by Ritter, Barnett, Denny, and Albin (2009) and Slavin, Lake, Davis and Madden's (2011) review of first-grade tutoring programs. The combined meta-analyses reviewed nearly 220 studies spanning the last 30 years. Examination of these studies can provide important information regarding the components of effective tutoring programs.

**Program type.** An important aspect of tutoring programs examined in all studies was the type of tutoring program that is successful. Programs ranged from highly structured to loosely structured. According to the definition used by Ritter et al. (2009), structured studies refer to studies in which tutoring time is explicitly outlined, containing specific lessons and materials, while loosely structured programs referred to programs in which tutors and tutees are given free choice in time usage and materials. Both Cohen et al. (1982) and Ritter et al. (2009) found considerably larger effect sizes in programs using highly structured programs

rather than loosely structured programs, with effect size differences of 0.25 and 0.45 respectively in favor of structured programs.

Cooke, Galloway, Kretlow and Helf (2011) examined the impact of highly structured programs by comparing two tutoring conditions involving paraeducators. The same materials were used throughout, however, half way through the study, a script was introduced to guide the instruction. During the scripted phase of the study, tutors provided significantly more opportunities for direct student practice of skills than during the non-scripted phase. In addition during the scripted phase, the on-task time of students increased as compared to the first phase. Although the results of on-task performance are encouraging, this study did not directly examine the increase in general reading ability between the groups so it is impossible to make claims regarding its academic efficacy.

Though the use of scripted and highly structured programs is often contested in educational settings (Sawyer, 2004; DeVries, 2006), the above studies indicate that they may have an important place in tutoring settings. Paraprofessionals and community volunteers do not have the level of training as teachers, and so the use of a structured or scripted program may increase the effectiveness of instruction by providing a guided framework for the tutoring session. Not only does it seem to improve academic achievement (Cohen et al., 1982, Ritter et al, 2009), but Cooke et al. (2011) also reported that both students and paraprofessionals preferred the scripted lessons as they increased tutor self-confidence and student participation.

**Instruction type.** Another important aspect for consideration is which type of skill is the most effectively taught. In general, the meta-analyses found that lower level skills (i.e., phonics, phonemic awareness, letter or word reading, depending upon the study) had the largest effect sizes. In general, this was described as “lower order skills” or “phonics” in the meta-analyses, though Elbaum differentiated between phonics and phonemic awareness. Cohen et al. (1982) reported effect size on lower level skills of 0.76, Ritter et al. (2009) reported 0.41, Elbaum et al. (2000) reported 0.50 on phonemic awareness and 0.43 on phonics and Slavin et al. (2011) reported 0.62 on studies that focused on these skills. Slavin et al. (2011) also made a distinction regarding the degree that these skills are emphasized in the instruction. Programs, such as *Reading Recovery*, that have minimal reliance on phonics had a mean effect size of only 0.23. Reading comprehension, on the other hand, produced much lower effect sizes. Cohen et al. (1982) reported 0.24, while Ritter et al. (2001) reported 0.18. The only exception to this finding is the study by Elbaum et al. (2000) where comprehension instruction was found to have the larger effect size ( $ES = 2.41$ ).

One possible explanation for the larger comprehension effect size in the Elbaum et al. (2000) analysis could be the grade level of students in the examined studies. Across all meta-analyses the majority of participants were in grades three and below. Instruction at these grade levels tends to be more focused upon these lower level skills, as they are a necessary precursor to comprehension abilities. According to the Connecticut Longitudinal Study (Foorman, Francis, Shaywitz,

Shaywitz, & Fletcher, 1997) lower level skills such as decoding play a much larger role in reading comprehension in the early grades. In fact, the ability to decode accounts for almost 80 percent of passage reading ability in first grade students. However, by fifth grade this has dropped to just under 50 percent, indicating that higher order comprehension processes begin to play a more significant role than decoding in the upper grades. Unlike the other studies, Elbaum et al. (2000) included several studies examining students in grades four through six. Because of their developmental level, it makes sense that these older students would see greater improvement on reading comprehension levels than the younger students.

**Tutor type.** Another important aspect of tutoring that can influence results is the type of tutor selected. Three meta-analyses examined this aspect of the tutoring situation with mixed findings. Ritter et al. (2009) found that all tutors examined (i.e., parents, college students and community tutors) were equally effective. Slavin et al. (2011) found that in 21 separate studies trained teachers produce the highest effects ( $ES = 0.62$ ), however, in 18 studies, paraprofessionals and other volunteers had a combined effect size of 0.24, which is considered a small effect size (Cohen et al., 1982). Elbaum et al. (2000) found that in three studies, college students had the highest effect ( $ES = 1.65$ ), followed by paraprofessionals in one study ( $ES = 0.68$ ), teachers in 28 studies ( $ES = 0.36$ ), and other community volunteers in eight studies ( $ES = 0.26$ ).

The incredible range of effect sizes across these meta-analyses, from 0.24 - 1.65, begs the question of whether the type of tutor is the most critical aspect of the

intervention. All types of tutors appear to be effective in different studies.

Paraprofessionals range in effectiveness from 0.24 to 0.68, community volunteers and college students range from 0.26 to 1.65, and teachers range from 0.36 to 0.62.

The only conclusive finding from these results is that all types of tutors *can* be effective to varying degrees. Based on these findings it may be appropriate to question whether *who* the tutor is the most important factor or if another factor plays a larger role in tutoring success. Along this line, Topping (1998) found that it did not matter who did the tutoring as much as it mattered what they did. He found that when teachers and paraprofessionals used the identical method of tutoring the students made nearly identical gains. However, a similar study by Ehri, Dreyer, Flugman, and Gross (2007) found that even when using the same materials, teachers outperformed paraprofessionals due to their more extensive knowledge of the reading process. Though there are mixed results as to the *most* effective type of tutor, all studies seem to agree that non-certified personnel can be effective if given the proper training. Elbaum et al. (2000) in particular noted that highly trained tutors had an effect size of 0.59 in relation to non-trained tutors whose effect size was -0.17. Additionally, studies in which tutors implemented instruction with a high degree of fidelity had much larger effect sizes.

The information gained from the above meta-analyses indicates that tutoring can be effective across a variety of settings and with many different tutors. Though Slavin et al. (2011) reported that teachers are the most effective in this role, the general consensus across studies is that as long as tutors are highly trained, non

certified personnel can be effective tutors (Cohen, et al., 1982; Elbaum et al., 2000; Ritter et al., 2009). However, recruiting reliable community tutors can be a challenging task for all districts. One solution to this problem has been the development of programs where students tutor each other such as peer tutoring and cross-age tutoring. Programs such as *Peer Assisted Learning Strategies* (PALS) (i.e., Fuchs & Fuchs, 2005; Fuchs, Fuchs, Mathes, & Simmons, 1997) have been implemented and researched extensively with positive results. Peer tutoring programs such as PALS generally pair students within the same classroom to provide additional help to struggling readers. Cross-age tutoring, on the other hand, pairs students from different classes and grade levels and has been examined less explicitly and with considerably more mixed results than same age peer tutoring.

### **Cross-Age Tutoring**

Many of the effective tutoring programs examined in research are one-to-one tutoring programs implemented by certified personnel or paraprofessionals (Slavin, 2010). Unfortunately, this model of tutoring is very cost prohibitive, especially in low-income areas with teacher shortages. One response to this has been the implementation of tutoring programs using volunteer tutors. Though these tutors have demonstrated that they can produce substantial gains in their tutees, especially if given proper training (Ritter et al., 2009), there are the problems of recruitment and scheduling that are often prohibitive to districts wishing to implement this tutoring method. Another option is to train students to teach each other. When students within the same class or grade level are trained to teach each



other this is called peer tutoring. However, when older students are trained to work with younger students, this is called cross-age tutoring (Gaustad, 1993). This tutoring format is becoming more and more popular across the country with programs such as the *Willamette High School Peer Tutoring Program* in Oregon and the *Coca-Cola Valued Youth Program* in Texas (Anderson, 2007). Big Brothers and Big Sisters have developed programs where high school students spend class time working with struggling elementary students for class credit (Healy, 2012). However, the rise in popularity of these programs has not necessarily been due to their credibility from a research standpoint. Reported gains from these programs are generally in the form of informal teacher and student reports rather than documented outcome measures. While these aspects are important in implementation success, it is important to critically analyze whether these programs actually have an impact upon the academic achievement of the students participating in them.

### **Justification for Cross-Age Tutoring**

When implementing a new educational intervention, the question of whether the new intervention is worth attempting must always be addressed. In the case of cross-age tutoring, the question is whether the time spent training older students and time taken from classroom instruction for both parties is worthwhile compared to tutoring situations involving adults. There are two aspects of cross-age tutoring that make it particularly beneficial for schools and students. The first aspect is the cost of cross-age tutoring. School districts continually work within restricted

budgets and paying paraprofessionals or teachers to work one on one with students is costly (Wright & Cleary, 2006). Levin (1984) did a cost analysis of various intervention formats for struggling students and found that cross-age tutoring and computerized technology were the most cost effective types of intervention in schools. While students who qualify for special education services will always have additional help given to them, there is often not money in the budget to help students on the margin. Wright and Cleary (2006) stated that cross age tutoring is a way to expand schools' capacity to provide additional support to this group of students.

The social aspect of cross-age tutoring is also important to consider when justifying its implementation in schools. Vygotsky's social learning theory stated that children learn as a result of their interaction with others (Vygotsky, 1998). Within a tutoring relationship this interaction occurs at a deeper level than in classroom interactions due to the individualization that is possible. Allen (1976) examined the socialization aspects of cross age tutoring and found that children develop stronger affective relationships in cross-age tutoring dyads than when an adult is involved. He surmised that the communication between children is more natural and acceptable than with an adult. Students communicate differently because they participate in similar social situations and have similar cultural knowledge (Paterson & Elliott, 2006). Additionally, the older student also acts as a role model and the younger child strives to emulate them, making the tutoring more effective and acceptable to the tutee. Finally, Allen and Feldman (1976) found that

third and sixth grade students were actually more accurate than adults at gauging the level of understanding in a student based on nonverbal reactions because of the closeness of their ages. Thus, it is possible that the interactions between children will not only provide them with beneficial mentoring relationships, but also give them an advantage over adults in some aspects of the tutoring process.

Both the cost structure and social aspects of cross-age tutoring provide a compelling argument for the implementation of these programs. While it is acknowledged that elementary students most likely cannot provide instruction of the same quality as a trained adult, they can be helpful in providing instruction to students who may otherwise not receive help due to budgets and eligibility guidelines.

**Cross age versus peer tutoring.** Cross age tutoring is not the only type of student-to-student tutoring that is used in schools. In many cases, peer tutoring, where students of the same age tutor each other, has been used rather than cross age tutoring. Programs such as PALS have implemented this tutoring format with success (e.g., Fuchs et al., 1997). This format is more convenient for teachers as all scheduling happens within one classroom. Since this format is successful and convenient, it is important to consider whether the extra effort of cross age tutoring is worthwhile.

In an effort to answer this question, several studies have compared the effects of cross age tutoring and peer tutoring. In 1986, Scruggs and Osguthorpe carried out two studies involving tutoring. The first study examined cross age

tutoring of beginning reading skills. Compared to a control group, the cross age tutoring group made significant gains on both the curriculum based word reading measure and their raw score growth on standardized measures. A follow up study was then completed by implementing the same program using peer tutors rather than cross age tutors. Students tutored by peers made significant gains on the curriculum based measure, but not the standardized measures when compared to a control group. While it is clear to see that the cross age tutoring made greater gains compared to a control group, the scores of the two tutored groups were not compared, so it is difficult to say how big of a difference the cross age tutoring made compared to the peer tutoring.

However, in both Van Keer (2004) and Topping, Miller, Thurston, McGavock and Conlin (2011), cross age and peer tutoring formats were directly compared. Van Keer (2004) examined the effects of tutoring upon the tutor rather than the tutee. Reading comprehension instruction was first taught in the classroom and then students either tutored a peer or a younger student. The results indicated that students involved in the cross age tutoring made greater gains on both measures of reading comprehension and self efficacy than did the peer tutors or control group.

In a more recent study, Topping et al. (2011) randomly assigned 129 schools to either peer or cross age tutoring programs for a two-year period. Students were tutored in reading comprehension and reading fluency using a paired reading technique. At the end of two years, students participating in the cross age program made greater gains than the peer tutoring group. Additionally, this study found that

cross age tutoring was especially beneficial for students with low reading ability and of low socioeconomic status.

While research on peer tutoring has most certainly proven that it is beneficial in classrooms, the growing body of work on cross age tutoring indicates that it could provide greater gains than peer tutoring. Often scheduling problems do not allow for the collaboration between classrooms and in those cases, within classroom peer tutoring can be beneficial for students. However, based on the studies previously mentioned, it appears that the extra effort of implementing cross age tutoring may be worthwhile for both tutors and tutees (Scruggs & Osguthorpe, 1986; Topping et al., 2011; Van Keer, 2004).

**Article selection.** In order to answer the question of whether cross-age tutoring programs produce concrete gains in academic achievement, a literature review of the current research on cross-age tutoring was conducted. All articles examined were specifically *cross-age* studies and did not include *peer* tutoring studies. The only exception to this included studies where a cross age tutoring condition was directly compared to a peer tutoring condition within the same study. The search was conducted using PsychInfo with the additional database *ERIC* selected and using the keywords “*cross age tutoring*” and “*reading.*” This search returned 162 results. There were several criteria for study inclusion in the review. First, no studies were included before the year 1980 as it was decided that school practices have changed significantly in the past 30 years. Many of the studies examined only the attitudinal changes in students based on the cross-age tutoring

program. This review is focused on the academic achievement of students, therefore the studies had to measure the academic achievement of students as well. Many of the studies used a “book buddy” format where older children simply bring books to the younger children’s class and read to them. Though this may be a valuable activity, for this review, studies had to include a tutoring or teaching aspect as well as reading together to be included. Papers written as “how-to” documents or a teacher’s experience with cross-age tutoring were also excluded, as they did not provide evidence to support their opinions on the process. Though there have been many cross-age tutoring studies done in various subjects, studies for this review excluded all subjects except reading. Finally, in order to be included, the study had to include some type of quantitative measure of growth across the study. Research designs included experimental, quasi-experimental, single subject, and pre-post test design. Results did not necessarily have to be examined statistically, but growth had to be measured using a quantitative outcome measure.

Of the 162 documents identified by the original search, 23 met the search criteria, with 15 being published journal articles and 8 being dissertations. The documents spanned the time period of 1980 – 2011. Seven studies were single subject design, 5 were pre-post test design, 10 were quasi-experimental, and 1 was experimental. Only 11 of the studies (the quasi-experimental and experimental) included control groups. It is difficult to make generalizations of the findings of studies without control groups because it is hard to attribute gains to the intervention without including this aspect. In addition, only one study used a truly

randomized design, though many quasi-experimental studies randomly assigned classrooms. Without true randomization it is impossible to control for extraneous variables and ensure that growth is due to the intervention (Gall, Gall, & Borg, 2007). While studies with control groups and random assignment are the only generalizable studies, it was decided to include single subject and pre post test no control designs due to the small number of studies utilizing control groups and randomization in order to have a more comprehensive review of the subject.

The majority of the studies ( $n = 12$ ) involved comprehension instruction, but other studies examined decoding, sight word identification, fluency, letter naming and morpheme naming. Studies included tutees between the ages of preschool through fourth grade and tutors from third grade through seniors in high school. Most studies included at least one standardized measure of achievement, though two only examined a researcher made measure of growth directly related to the study. Curriculum based measures (CBM) were also common in studies, and though one used DIBELS (Good & Kaminski, 2002), most were CBMs were taken from the basal reading series used in the school or the tutoring curriculum. Additionally, some studies used measures of attitude or motivation to examine change from pre to post testing. An overview of the studies reviewed is presented in Table 1.

### **Benefits of Cross-Age Tutoring**

Cross age tutoring has been implemented in a variety of ways. The most common implementation involves upper elementary students tutoring primary grade students within the same school (Chiang, Thorpe, & Darch, 1980; Davenport,

Table 1

*Overview of Documents Examined for Literature Review*

Article			Tutees		Tutors		Intervention			Outcome	
Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Barbetta & Miller	1991	JA	SS	6	1, 2, 3	6	HS	Sight Words	12	Number of words read correctly	All tutees increased in # of words read
Chiang, Thorpe, Darch	1980	JA	SS	4	2, 3	4	5	Morpheme reading fluency	4.25 - 1.25	Number correct of morphemes taught in intervention	All students increased in percent of words read correctly by end of tutoring
Coats	2007	DS	PPT	5	1	8	6	Fluency		*Slosson Oral Reading Test *Self-Report Reading Attitude Inventory	$t = -9.25^*$ $t = -5.55^*$

All results apply to tutees unless specifically stated

JA = Journal Article; DS = Dissertation

SS = Single Subject; E = Experimental; QE = Quasi-Experimental; PPT = Pre -Post Design (no control); Sign. = Significant

\*  $p < .05$

\*\*  $p < .01$

\*\*\*  $p < .001$



Table 1

*Overview of Documents Examined for Literature Review*

Article			Tutees		Tutors		Intervention			Outcome	
Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Davenport, Arnold, & Lassman	2004	JA	PPT	4 rooms	K	10	5th	Comp.	4	*Elementary Reading Attitudes Survey *Brigance Comprehensive Inventory of Basic Skills - Word Recognition and Reading Comprehension	Kindergarten attitudes toward reading improved and fifth grade students increased slightly on reading achievement. No statistics just visual analysis of data

All results apply to tutees unless specifically stated

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Article			Tutees		Tutors		Intervention			Outcome	
Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Fisher	2001	JA	PPT	25	2	22	7	Comp. & Onset-rime	1 year	Gates-McGinitie Reading Test	*Only tutor progress measured $t = 7.21^{**}$
Glaser	2002	DS	SS	12	1, 3 & 4	6	12	PA Decoding Spelling & Fluency	4 mon	Read Naturally Reading Fluency Passages	50% of students had Reliable Change Index Scores
Gliesecke, Cartledge, & Gardner	1993	JA	SS	4	3	4	4	sight words	8	*List of sight words taught in intervention *Piers-Harris Children's Self Concept Scale	*Tutors and tutees increased word reading ability *Tutors increased in self concept

All results apply to tutees unless specifically stated

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Article			Tutees		Tutors		Intervention			Outcome	
Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Guy	2001	DS	SS	6	K	6	4, 5, 6	Letter Naming	7.5	DIBELS Letter Naming Fluency	All students made gains during intervention phase
Hattie	2006	JA	QE	124	2	124	5	Fluency & Comp.	1 year	*Sunshine Running Records *Number of books checked out	$F(1, 104) = 4.31^*$ *Participants checked out more books *Higher Accelerated Reading Scores

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Hilger	2000	DS	QE	84	3, 4	45	HS	Comp. & Sight Words	16	*Standardized Test for Assessment of Reading *CBM	*No diff on S.T.A.R. CBM gains - $F(1, 79) = 6.7^{**}$
Jacobson et al.	2001	JA	QE	78	3	21	7	Fluency & Comp.	16.8	*Standford Diagnostic Reading Test *Elementary Reading Attitude Survey	*Tutor SDRT - $t = 8.77^{**}$ *Tutee attitude $t = 11.62^*$

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Jensen	1991	DS	PPT	27	1, 2, 3	45	5	Fluency & Comp.	46	*Gates-MacGinitie Reading Inventory *Stanford Reading Achievement	Higher normal curve equivalent for comprehension*
Labbo & Teale	1990	JA	QE	20	K	20	5	Comp.	8	*Gates-MacGinitie Reading Inventory *Piers-Harris Children's Self Concept Scale *Teale & Lewis Reading Attitude Scales	Only tutors measured GMRT - $F(2, 14) = 18.52^{***}$ P-HCSCS <i>n.s.</i> TLRAS - <i>n.s.</i>

All results apply to tutees unless specifically stated

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Limbrick, McNaughton, & Glynn	1984	JA	SS	6	3	3	5	Fluency & Comp.	~ 8	*Neale Analysis of Reading Ability *Metropolitan Achievement Test *SRA Curriculum Based Measures	*Accuracy increased for tutees according to CBM *Twice the gains on Neale Analysis and four times the gains on comprehension compared to controls

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Menikoff	1999	DS	QE	20	2	20	6	Decoding	22.5	* Decoding Skills Test *Elementary Reading Attitude Survey	DST - $F = 22.71^{***}$ Attitude - <i>n.s.</i>
Patterson & Elliott	2006	JA	PPT	32	2, 3	29	9	Comp.	1 year	STAR Reading Level	Only tutors examined - all made gains in STAR level

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Scruggs & Osguthorpe	1986	JA	QE	27	1, 2, 3	27	4, 5, 6	Decoding & Fluency	~15	*Woodcock-Johnson Word Attack, Sight Word Reading, Reading Comp. *Beginning Reading I or II	No sign. on WJ measures Beginning Reading Gain scores - $t = 2.46^*$
Taylor, Hanson, Justice-Swanson & Watts	1997	JA	QE	12	2	12	4	Comp.	10.5	*Reading level according to basal curriculum *Metropolitan Achievement Test-7	Students reading at grade level $\chi^2 = 11.38^{***}$ MAT7 $F(2, 24) = 3.66^*$

All results apply to tutees unless specifically stated

JA = Journal Article; DS = Dissertation

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Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Top	1984	DS	QE	82	1	28	4, 5, 6	Decoding & Fluency	18	Beginning Reading I	$F = 59.3^{**}$ $d = 1.2$
Topping, Miller, Thurston, McGavock & Conlin	2011	JA	E	129 Primary Schools				Comp.	2 years	*Performance Indicators in Primary Schools *NFER Group Reading Test	Cross-age group $ES = .22$ Peer group <i>n.s.</i>
Udaka	2009	DS	QE	18	Pre-K	18	5	Dialogic Reading		*AGS-Early Screening Profile *Cognitive/Language Profile *PPVT-4 *Expressive Vocabulary Test	Sign. on all measures* Effect sizes AGS- .40 PPVT- .41 EVT- .64

All results apply to tutees unless specifically stated

JA = Journal Article; DS = Dissertation

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*Overview of Documents Examined for Literature Review*

Article			Tutees		Tutors		Intervention			Outcome	
Author/s	Year	Source Type	Design	#	Grade	#	Grade	Skill	Hours	Outcome Measure	Effect
Van Keer	2004	JA	QE	69	2	454	5	Comp.	1 year	Dutch Reading Comprehension Test	Cross Age $d = .36$ Peer Group $d = .31$
Wright & Cleary	2006	JA	SS	27	2, 3	27	3, 4	Fluency	11	CBM taken from basal series	$ES$ for Tutors - .78 $ES$ for Tutees - 1.81

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Arnold, & Lassman, 2004; Van Keer, 2004). However, the process has been adapted to work in situations where high school or middle school students leave their own schools to tutor within the elementary school as well (Fisher, 2001; Glaser, 2002; Jacobson et al., 2001; Patterson & Elliott, 2006). The process has been used to teach letter naming (Guy, 2001), decoding skills (Bond, 1982; Jacobson, et al., 2001), fluency (Glaser, 2002; Hattie, 2006; Limbrick, McNaughton, & Glynn, 1984; Wright & Cleary, 2006), comprehension (Davenport et al., 2004; Hattie, 2006; Jacobson et al., 2001; Labbo & Teale, 1990; Van Keer, 2004) and morphology (Chiang et al., 1980). Regardless of the age of the tutor or the subject being instructed, the general principle is that the older student is considered the expert and uses his knowledge to increase the skills of the younger student. Regardless of the specific format or subject chosen, the research examined makes a strong case for the implementation of cross age tutoring programs.

**Academic benefits.** Instructional time is precious, especially for those students who are seen to be falling behind in reading skills. If an intervention is to be implemented, it is important to ensure that it will have positive academic benefits. When tutee progress is examined across all studies, tutees made progress in nearly all studies. Progress of tutees is particularly visible in studies where outcome measures are closely aligned to instructional material. For instance, Giesecke, Cartledge, and Gardner (1993) and Barbetta and Miller (1991) examined tutees' abilities to learn sight words through flash card drills. In these studies, fourth grade students (Giesecke et al., 1993) or high school students (Barbetta &

Miller, 1991) presented sets of flash cards to first through third grade students each day. Words were then used in sentences or review games to reinforce learning. Both of these studies found gains in the students' abilities to recognize the words they were taught in just six brief weeks of tutoring. However, neither of these studies examined the impact of this learning upon general outcome measures of reading, such as oral reading fluency or standardized measures.

Wright and Cleary (2006) also presented an example of tutee progress in a study where third and fourth grade students used a scripted lesson format to develop the fluency skills of struggling second and third grade students. Prior to tutoring, tutees demonstrated a rate of growth of 0.4 words per week. However, the mean slope for tutees at the end of the tutoring program indicated 1.05 words per week. However, though the studies mentioned above all reported student gains, none of them included a control group, so it is difficult to determine whether the improvement was due to the tutoring or some other influence.

Another variable that appears to influence the effectiveness of the tutoring projects is including a link between classroom instruction and tutoring content. Both Taylor, Hanson, Justice-Swanson and Watts (1997) and Van Keer (2004) provided a link between their cross-age tutoring and small group or classroom instruction. The study designed by Taylor et al. (1997) involved a second grade small group intervention class in the fall semester that was followed up by cross-age tutoring by fourth graders in the spring semester. Another group of second graders received the small group intervention in the spring but no cross-age tutoring. When

these groups were compared, it was found that students in the intervention plus tutoring group made significant gains over the control group. When compared to the intervention only group, the intervention plus tutoring made gains approaching significance. Additionally, the fourth grade tutors made progress in their reading fluency and comprehension; however, no control group was examined for the tutors, so it is difficult to attribute gains to the tutoring program for the older students.

The Van Keer (2004) study involved the teacher instructing the entire fifth grade class in comprehension strategies. Then, two groups participated in follow up activity in which they either practiced the strategies in a peer or cross-age tutoring setting while one group only received the teacher instruction and the control group received no strategy instruction. An interesting difference in this study is that the subjects of the study were the tutors rather than the tutees. In fact, no data was collected regarding the comprehension progress made by the tutees. Results at post-test indicated that students who participated in the cross age tutoring activity made greater gains than those in the control and peer tutoring group. A potential explanation for this is the difference in responsibility placed upon students in the cross-age tutoring groups. These students were required to fill a leadership role and they also had to fully teach the strategy to another student. In contrast, in the same age peer tutoring groups both students had already received instruction in the strategy and the tutoring time was additional practice. It is possible that the act of teaching the strategy in addition to the leadership role forced the students in the

cross-age group to interact with the strategies at a deeper level, which accounts for the greater growth.

The results of these studies bring to light another aspect of cross-age tutoring that is important to consider. In both Taylor et al. (1997) and Van Keer (2004), the tutors made progress throughout the study as well as the tutees. This is a very common finding across studies. Of the 25 studies examined for this review, 17 reported gains in tutor performance as well as tutee performance. Because of these results, it is quite common for researchers to select tutors who have been diagnosed with a learning disability or who have demonstrated difficulty with reading (Chiang et al., 1980; Giesecke et al., 1993; Jacobson et al., 2001; Limbrick et al., 1984; Taylor et al., 1997). Studies with this design seek to improve the abilities of both the tutee and the tutor through the intervention implementation.

As mentioned previously, many of the studies in this review found gains in tutor performance as well as tutee performance. In order to maximize learning opportunities, the tutors chosen are often students needing additional help due to a learning disability (Top, 1984; Limbrick et al., 1985; Fisher, 2001; Guy, 2001; Coats, 2007). The theory is that by giving these students additional practice with the reading process and putting them in a leadership position, they will not only help the younger student, but also increase their own reading ability (Labbo & Teale, 1990; Davenport et al., 2004).

Almost all studies reported gains in tutor achievement after the completion of the study. The most substantial gains were found by studies using near transfer

measures, such as word reading tasks including words learned during the study (Chiang et al., 1980; Giesecke et al., 1993; Wright & Cleary, 2006), though several studies found gains in standardized measures as well (Menikoff; 1999; Fisher, 2001; Van Keer, 2004). Additionally, as was seen with tutees, studies using a more structured format proved to be more successful for tutors (Giesecke et al., 1993; Menikoff, 1999; Hilger, 2000). Menikoff (1999) provided a very structured approach in which explicit phonics lessons were presented along with a matching storybook with highlighted phonics and sight word elements followed by a review game. Both tutors and tutees made improvements in their decoding ability by the end of the study. Hilger (2000) used a slightly less structured program. In this study, tutors were given a general format to follow including reading a book, discussing what was read, and writing a summary. Tutors were given various strategies to use during the discussion and were allowed to choose the strategy they thought best for each book. Tutors and tutees both made progress on curriculum-based measures, but standardized measures were not statistically significant.

An interesting trend in studies measuring tutor progress is that many of these studies do not measure tutee progress in any way (Labbo & Teale, 1990; Fisher, 2001; Davenport et al., 2004; Van Keer, 2004). In general, these studies involve students with learning disabilities and the intervention is focused on increasing the skills of these students through the tutoring process. While the focus on tutor progress is an important aspect to consider, given the time commitment

and loss of regular classroom instructional time, it seems important to confirm that the process is beneficial for both tutors and tutees for the program to be sustainable.

***Cross school tutoring.*** Of particular interest at present are studies in which middle and secondary students leave their school to provide tutoring to elementary school students. This format for tutoring is much less apparent in the literature. The current literature search only found seven studies matching the criteria that involved middle or high school students. This format provides distinct challenges such as scheduling and transportation conflicts that make this format particularly difficult. However, the current studies provide some insights into how this type of tutoring may be best accomplished and the results that can be expected.

In general, studies that examine cross school tutoring involve older students who are themselves struggling readers (Bond, 1982; Fisher, 2001; Jacobson et al, 2001; Paterson & Elliott, 2006). These students are placed in a remedial reading class and as part of their course work they participate in tutoring elementary school students. This has proven to be a beneficial program for these older struggling readers. Both Fisher (2001) and Jacobson et al. (2001) report statistically significant changes in their tutors' reading abilities, however, neither measured the academic gains of the tutees.

Three studies involving high school students did not recruit struggling readers, but rather recruited average readers to participate (Barbetta & Miller, 1991; Glaser, 2002; Hilger, 2000). The students in these studies were either recruited from study hall (Barbetta & Miller, 1991) or voluntarily signed up for a



tutoring class offered at the high school (Glaser, 2002; Hilger, 2000). During their assigned class period these tutors left their school and carried out tutoring at the elementary school. They provided instruction in fluency (Glaser, 2002; Hilger, 2000) and sight word and vocabulary instruction (Barbetta & Miller, 1991). All three of these studies reported gains in their tutees' reading performance either compared to a control group (Barbetta & Miller, 1991; Hilger, 2000) or on a multiple baseline design (Glaser, 2002). In fact, Hilger (2000) reported that tutored students increased their words per minute score by 19.9 words compared to 14.1 words in the control group. The reported effect size for this difference is 0.58 and is considered a moderate effect size (Cohen et al., 1982).

In addition to providing instruction that can create significant academic gains in elementary students, the implementation of tutoring by average achieving students has several other advantages. Because these students volunteer to participate, their attendance and motivation are higher, at least initially. In studies such as Fisher (2001) and Paterson and Elliott (2006), tutors were students in a remedial reading course that participated in tutoring for class credit. Both of these studies reported that motivation increased dramatically throughout the project, but that initial motivation was quite low for some students. This aspect is important in terms of supervision of tutors. Tutors with high motivation and consistent attendance may not need the intensive supervision necessary to ensure implementation fidelity and increase tutee achievement, which is the focus of the current study.

It is clear from the small number of studies examined here that tutoring pairing secondary students with elementary students is possible and beneficial. However, the question of beneficial for whom is important to ask. The literature suggests that utilizing struggling readers is beneficial for the tutors themselves, but leaves the question of tutee progress unanswered (Fisher, 2001; Jacobson, 2001; Paterson & Elliott, 2006). On the other hand, there is evidence that this format can be successful when average readers are employed as tutors (Barbetta & Miller, 1991; Glaser, 2002; Hilger, 2000).

**Attitudinal benefits.** Not only do these studies report significant changes in academic achievement, many studies also report attitudinal changes as well (Jacobson et al., 2001; Labbo & Teale, 1990; Paterson & Elliott, 2006). Specifically, students reported higher levels of self-esteem after participation in the interventions, particularly older students. Students with learning disabilities tend to have low self-esteem and have very low motivation to participate in reading activities (Paterson & Elliott, 2006). Involvement in small group interventions seems to provide them with encouragement and increase their attitudes toward reading and themselves.

This trend is particularly noticeable for the tutors. Though tutees show some progress in several of the studies, the attitudinal gains are much larger for the tutors (Bond, 1982; Coats, 2007; Paterson & Elliott, 2006; Top, 1984). Attitude gains are also larger for tutors with learning disabilities. The general consensus across studies is that placing these students in a leadership role where they are the experts

leads to greater self-esteem. For instance, Bond (1982) implemented a tutoring program where consistently truant high school students tutored kindergarten and first grade students in early literacy skills. He reported that after working with their tutees, the tutors had a change in attitudes toward school and teachers. They reported better understanding toward their teachers and feeling that school was more important than previously reported.

While tutor attitude changes are generally higher, changes in tutee scores can also be seen. Though changes in attitudes toward reading are much smaller for tutees, especially primary grade tutees, tutees report that they enjoyed participating in the interventions (Hilger, 2000; Menikoff, 1999; Paterson & Elliott, 2006). Young students reported that they liked the attention from the older students and their excitement at working with them was clearly visible throughout the studies (Jacobson et al., 2001; Paterson & Elliott, 2006). These observations follow the conclusions of Allen (1976) and Allen and Feldman (1976).

### **Fidelity of Implementation**

In any intervention study, it is critical to examine the fidelity of implementation in order to assess whether or not the materials or methods have been used in the way they are intended. It is impossible to make a value judgment regarding a methodology if it has not been implemented in the way it was intended. Unfortunately, formal fidelity checks do not seem to be common in the area of cross-age tutoring. Very few studies reported explicit measurement of implementation

fidelity. However, the studies that did report fidelity checks generally measured this construct in similar ways.

In general, the studies examined that measured fidelity used checklists aligned with the curriculum or program being implemented (Guy, 2001; Udaka, 2009; Wright & Cleary, 2006). These checklists were generally researcher created in coordination with the materials or methods being implemented and each step was scored dichotomously as either implemented correctly or incorrectly. Researchers or assistants observed the tutoring sessions, or listened to recorded sessions, and scored the checklists accordingly. A percentage was calculated based on the number of steps implemented correctly divided by the total number of steps. Tutors in the three studies which conducted fidelity were able to achieve between 85% - 100% fidelity of implementation.

A less informal way of assessing fidelity of implementation is through continuous teacher or researcher observation. For instance, Van Keer (2004) did not examine fidelity formally through checklists. Instead, the classroom teachers were present in the room during all tutoring sessions and consistently observed tutoring dyads to examine implementation fidelity. If any problems were observed the teacher immediately stepped in to provide feedback and model correct implementation. Though this method is not as reliable for research purposes, it does provide continual reminders for tutors that fidelity is important. Additionally, the immediate feedback provided through this method of fidelity assessment allows the tutor to see proper implementation modeled and immediately correct his or her

own practices. Though the first method is most appropriate for research purposes, the second method is most practical for widespread implementation in classrooms.

### **Summary of Literature Review**

Examining the results of cross-age tutoring projects across all studies leads to the conclusion that regardless of the subject and strategy implemented, cross-age tutoring can be effective, not only for the tutee, but in many cases for the tutor as well. There are several factors that appear to play a role in the effectiveness of the tutoring. First, closely aligning intervention materials to outcome measures leads to reports of greater gains. Most studies examined in this review had durations of 15 weeks or less, many only running six to eight weeks. This short duration may be a factor in the lack of improvement on standardized measures. Second, aligning tutoring instruction with instruction taking place in classrooms by practicing skills or strategies introduced in regular instruction is beneficial for students. Third, using a structured or scripted tutoring technique helps tutors to focus the lesson and creates larger gains in tutees.

The current research base presents a foundational argument for the implementation of cross-age tutoring. However, there are several problems with the current research as well. First, the majority of studies on cross-age tutoring use a single subject design. While single subject designs are able to clearly demonstrate growth in the subjects, only one study established a control group to compare to the experimental group. In fact, of the studies examined, only 11 studies included a control group. Without a carefully established, randomly assigned control group it

is impossible to attribute student gains to the tutoring. Second, most studies used outcome measures that were closely aligned to their instructional material. While this practice is important to ensure that students are learning what they are taught, it is also important to examine how those skills transfer to more standardized measures. Most studies implemented curriculum based measures or a combination of curriculum based and one or two short standardized measures. Including a range of standardized measures that assess a broad range of skills would help to identify the effectiveness to the reading process rather than just to a single discreet skill. Finally, the meta-analyses (Cohen et al., 1982; Elbaum et al., 2000; Ritter et al., 2009; Slavin et al., 2011) examined stated that tutor training was essential to the success of the intervention. Although all studies included some sort of training, it generally consisted of a few hours worth of training and was focused on a very specific skill or strategy. It is widely recognized that reading is a complicated task (Moats, 1999) and a more comprehensive training of this process may lead to more substantial gains.

### **Statement of the Problem and Purpose for Current Study**

Many students struggle to learn to read and schools often do not have the funding to hire personnel to work with all children. Tutoring has proven to be an effective means of helping these students and cross-age tutoring is being used in many situations. Although there is a research base for the implementation of cross-age tutoring programs in schools, the majority of the studies lack the methodological rigor to generalize the findings. The purpose of this study is to

examine the implementation of a cross-age tutoring project through an experimental design using highly trained high school students as tutors and a highly structured curriculum.

Given the information regarding good tutoring practices, this study seeks to answer five questions:

1. To what degree does reading tutoring delivered by high school students increase the word reading abilities of elementary students as compared to a control group?
  - a. *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in word reading as measured by word attack and word identification skills.
2. To what degree does reading tutoring delivered by high school students increase the comprehension abilities of elementary students as compared to a control group?
  - a. *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in comprehension.
3. What level of implementation fidelity can high school students achieve when tutoring struggling readers using a structured/scripted curriculum?
  - a. *Hypothesis:* High school students will be able to achieve 90% implementation fidelity as measured by the Fidelity Checklist.
4. Is the tutoring format acceptable to tutees, tutors and school personnel?

- a. *Hypothesis:* When examining percentages on exit surveys completed by tutees, tutors and school personnel, it is expected that 80% of responses will indicate acceptance by participants.



## CHAPTER III

### Methodology

This study focused on the impact of utilizing high school students to serve as Tier II interventionists in a school where no other interventionists were available. It was designed to examine the growth in decoding and comprehension after small group instruction provided by high school tutors. The study used a curriculum designed to increase the decoding and spelling ability of students through explicit instruction in phonics. This chapter provides an overview of the participants and setting as well as an examination of the methodology. Also included is an overview of the data instruments and collection methods, the curriculum implemented and the procedures followed by tutors throughout the study. Additionally, treatment fidelity is addressed as well as analysis procedures.

The study used an experimental design comparing a randomly assigned control group to the experimental group who received tutoring. This methodology was selected because a randomly selected control group experimental design is a requirement of interventions classified as Scientifically Based Reading Research (Reading Excellence Act, 1998). It is considered the gold standard of research and allows for greater generalization of the findings. Utilizing this experimental design allows for the control of extraneous variables in order to ensure the internal validity of the study (Campbell & Stanley, 1963), specifically the variable of selection. By randomly assigning participants to groups the researcher is able to control for possible differences that may be present if participants were grouped without

randomization. By controlling for this variable, the researcher is able to determine that the intervention caused the resulting changes rather than an unrelated factor. The findings are mostly quantitative; using statistics to measure standardized test scores and progress monitoring data to examine changes across the study. In addition to the quantitative data, all participants provided qualitative feedback, in the form of surveys, regarding the procedures and implementation. This information is examined in order to determine the social validity of the implementation and to make recommendations for future implementation.

### **Participants**

**Setting.** The study took place in a Title I school in a small district in Middle Tennessee. The district serves approximately 3,200 students in grades pre-kindergarten through 12. The district has one high school, two middle schools and four elementary schools. The district population is 11% African American, 2% Asian/Pacific Islander, 4% Hispanic, <1% Native American, and 82% Caucasian. Approximately 29% of students are served under Title I funds and 67% receive free and reduced lunch.

The elementary school from which the students were recruited is the largest elementary school in the district, serving 361 students and is served by Title I funds. Title I grants are given to schools with at least ten percent of students considered economically disadvantaged. The school population is 11% African American, .5% Asian/Pacific Islander, 9% Hispanic, .2% Native American, and 80% Caucasian. Ninety-one point four percent of students are considered economically

disadvantaged. This school was also selected because budget cuts in the school resulted in the loss of all interventionists other than those serving students with Individualized Education Plans (IEPs). As a result, the classroom teachers were eager for help toward targeted students who were struggling with learning to read, but who did not have IEPs.

**High school tutors.** Nine high school students, five males and four females, were recruited to serve as tutors. These students were selected with the help of high school administrators and guidance counselors. In order to be eligible to participate, high school students must have been referred from a school counselor, teacher, or administrator. In addition they also had to meet the selection criteria established for the study, which are as follows: a) must be a junior or senior in high school, b) must have a minimum 3.0 GPA and c) must have room in their schedule to spend three class periods a week at the elementary school.

Recruitment of tutors began within the Advanced Placement classes in the high school. The principal attended one class and made the announcement to all students and outlined the idea for the tutoring project. All students who were interested were invited to an informational meeting with the researcher. This informational meeting took place during the first 30 minutes of school in the second week of the academic year. All students who were still interested after the meeting were given a permission slip to take home to their parents. Permission slips were returned to the main office of the high school. After two weeks another meeting was called, at the same time of day, with the student who returned permission slips. A

date was established for training and students were asked to commit to the training and the semester of tutoring. Any student unable to commit to both aspects was not selected as a tutor. Nine students attended the training and committed to carrying out the tutoring throughout the semester.

These nine students were each paired up with two elementary students. However, after two weeks of tutoring, the academic quarter changed at the high school and three students' class schedule would not allow them to continue tutoring, leaving six tutors, three boys and three girls. One of the remaining tutors decided that she wanted to take on a second group of students and so took over one of the leaving tutor's groups. For the majority of the study, four tutors had two students in their group, one student had two groups each with two students and one student ended up with one student because her second student moved during the third week of the study.

**Elementary school students.** Thirty-six elementary students were selected to participate in the study. Selection criteria for tutoring students was as follows: a) be in grades 1 or 2, b) return a signed consent form c) be performing below benchmark (i.e., 40<sup>th</sup> percentile or lower) as indicated by fall literacy or reading skills assessments (i.e., phoneme segmentation fluency, nonsense word fluency, and oral reading fluency) as measured by *DIBELS* (Good & Kaminski, 2002), and d) not served under a 504 or an IEP. Although students being served under IEPs at the beginning of the year were not considered, those being considered or tested for an IEP were eligible for participation as long as they had not been qualified at the

beginning of the study. Though some students under consideration qualified for the study, none returned consent forms.

The researcher was given access to the DIBELS (Good & Kaminski, 2002) data for all 165 first and second grade students. A list was made of the students who scored below benchmark on their fall assessments of Phoneme Segmentation Fluency and Nonsense Word Fluency. Based on the above criteria, teacher, reading specialists, and administrators were asked to identify the students who were being served under IEPs or 504s and these students were eliminated. Then, teachers were asked to identify any students who may not be a good fit for the study due to behavior problems. As tutors in this project were high school students with very little teaching experience, children with significant behavior issues were not selected. After the appropriate group of students was identified, consent forms were sent home with all students. Thirty-eight permission slips were returned, but two students moved before the two-week testing period was over, leaving 36 elementary students available for the study.

After all permission slips were collected, students were tested and then randomly assigned to be in the experimental or control group using a random number generator. Stratified random assignment was carried out within each classroom to the degree possible in order to ensure groups were equally distributed within classrooms. Within the first two weeks of tutoring, one tutoring student moved and was removed from the study. Additionally, when two tutors withdrew, this eliminated four more students from the experimental group. When these

experimental students left the study, their teachers requested the control students in their classrooms no longer be progress monitored on a weekly basis to eliminate disruptions in their classrooms. Twenty-six students remained in the study, 15 first graders and 11 second graders, leaving 13 in the control group and 13 in the experimental group.

The rate of attrition for tutors was 25%. Rate of attrition for both treatment and control group for elementary students was 14%. Though differential attrition is considered a risk to internal validity, in this case the risk is minimal. As students in the treatment group exited the study for various reasons the control students within the same classroom were also removed. Therefore, comparison between control and experimental groups was not affected by instructional differences that may have occurred if attrition had taken place across all classrooms.

## **Materials**

### **Measures.**

***Woodcock Reading Mastery Test 3<sup>rd</sup> Ed. (WRMT-III).*** The WRMT-III (Woodcock, 2011) is an individually administered measure of reading readiness and reading achievement for ages 4 years 6 months to 79 years 11 months. It is used to evaluate struggling readers and identify strengths and weaknesses in reading profiles. Reliability indices indicate that the WRMT has high reliability with median internal consistency measured at .91 and median split-half reliability at .95. Subtests to be used include, Word Identification, Word Attack, and Passage Comprehension. Form A was given at pre-test and Form B at post-test.

*Word identification and word attack.* The word identification subtest of the WRMT is a measure of real word reading. It contains both regular (words that follow spelling patterns) and irregularly (words that don't follow spelling patterns) spelled words. The word attack subtest is a list of 26 nonsense words. This subtest measures the ability to apply phonetic principles to unknown words. These subtests were used to show progress in word reading and decoding ability from the beginning to the end of the study.

*Passage comprehension.* The passage comprehension subtest is a measure of reading comprehension. It contains short passages and asks the student to supply an important word that is missing from the text. This test was used to assess growth in comprehension from pre to post test.

***Peabody Picture Vocabulary Test 4<sup>th</sup> Ed. (PPVT-4).*** The PPVT-4 (Dunn & Dunn, 2007) is an individually administered measure of receptive vocabulary knowledge and has been normed for ages two years six months to 90+ years. It can be used to diagnose reading difficulties and assess individual differences in vocabulary knowledge as well as monitor response to instruction. Reliability of the PPVT-4 is considered high with split-half reliability being 0.95 by grade and 0.94 by age, as well as test-retest reliability of 0.93. The PPVT was used to assess pre-intervention levels of receptive vocabulary knowledge and used to ensure that there were not significant language differences in the control and experimental groups.

***Phonics for Reading placement assessment.*** The *Phonics for Reading* assessment is a brief placement test given to determine an appropriate starting

place for intervention when using the *Phonics for Reading* program. It can also be used to evaluate student's progress throughout the levels of the program. The assessment provides information about the student's level of decoding ability and provides a starting point for instruction within the curriculum.

***Progress monitoring tools.*** Students were also progress monitored on a regular basis to track patterns of change throughout the study. On a weekly basis students were given researcher made word reading fluency probes to measure growth in concepts taught through *Phonics for Reading*. These probes were word-reading probes containing 50 words each to be administered in a standard format. A bank of words containing features to be introduced in the study was created and words were randomly selected to create each probe. Each probe has randomly selected words from across the all lessons in order to measure growth across the curriculum. An example of this tool is included in Appendix A. Additionally, the Word Identification Fluency (Fuchs, Fuchs & Compton, 2004) test was given weekly to measure growth in sight word knowledge.

***Social validity surveys.*** A brief survey was given to all participants (tutors and tutees) to gauge the acceptability of the intervention to each participant. Tutors were given a survey to fill out independently and tutees will answer several interview questions during their post-testing. Additionally, school personnel involved in the study were given a brief survey to fill out regarding their perceptions of the study implementation. Surveys are included in Appendix B.



**Curriculum.** *Phonics for Reading* (Archer, Flood, Lapp, & Lungren, 2011) is a supplementary decoding program designed to teach first through third grade reading skills. It was created based on the research documented in *Becoming a Nation of Readers* (Anderson, Heibert, Scott & Wilkinson, 1985), *Preventing Reading Difficulties* (Snow, Burns, & Griffin, 1998), and the report of the National Reading Panel (2000). It is a teacher-directed, systematic and explicit approach. It was designed to target struggling readers, specifically with decoding ability. Each lesson introduces or practices target sounds, uses the sounds in sentences and passages and finally each sound is practiced through spelling. Independent practice activities are also included in a workbook.

*Phonics for Reading* is highly structured in the format of concepts introduced and practiced. Each concept is introduced and taught to mastery before the next concept is introduced. Level One progresses from short vowels, final doubled letters, consonant digraphs and blends. A scope and sequence is provided in Appendix D. In general, first grade students completed a lesson over the course of two tutoring sessions and second grade students completed one lesson per session.

*Phonics for Reading* was selected as the curriculum for the intervention due to its systematic research-based design. Additionally, research indicates that less skilled implementers are more successful when implementing a scripted curriculum (Cooke et al., 2011). Due to the nature of the tutors, namely unskilled high school students, it was decided that a highly scripted and structured program would

maximize the extent of correct implementation and provide them with a foundation for each tutoring session.

### **Procedure**

**Testing Procedures.** All students were tested by the researcher. Testing took place in the middle of September and all students were tested within two weeks of the tutoring start date. All tests were administered during one session and testing took place in a small intervention room not currently being used by the school. The students were pulled from their classroom during a time convenient for the classroom teacher and testing took between 20 to 30 minutes. During the pre-test phase, students were given all subtests of the WRMT, the PPVT, the grapheme knowledge test and the *Phonics for Reading* pretest. At post-test, students were given all subtests of the WRMT, the grapheme knowledge test and the tutee survey was given to the experimental group.

**Tutoring Procedures.** Six high achieving high school students were selected based on teacher and administrator recommendations. These students received training in how to provide supplemental reading instruction. Each student was then paired with two elementary students at one elementary school. However, due to a student moving halfway through the intervention one tutor had one student for the majority of the study. Tutoring occurred 3 days a week for 30 minutes each session. Tutoring took place during the school day, with high school students providing tutoring in one of several small group tutoring rooms located within a suite of intervention rooms. Scheduling for each group was dependent upon the various

classroom schedules and was arranged with each tutor and teacher on an individual basis.

Each day the tutors arrived early and set up all materials in their given location. The tutors then collected the students from their classroom and began tutoring. Tutoring sessions lasted 30 minutes and then tutors prepared their materials for the next day, filled in a tutor self-check list on the lesson they had just taught and filed all materials.

Each day tutors were responsible for keeping attendance for themselves and their students. They also recorded the lesson taught, filled out a self-checklist on the day's lesson, and recorded any problems experienced during the lesson or questions they might have had based on the day's events. The supervisor was generally available after each session to visit with the tutors regarding their questions or concerns if necessary.

Each week, students administered progress-monitoring probes to their students on Thursdays. Tutors were provided with a folder for each child containing each progress monitoring probe and a recording sheet to mark results. The researcher collected these probes each week for review and data entry.

The researcher was present each day to act as supervisor during the tutoring sessions and to help with discipline problems or implementation problems. On the rare occasion that the researcher was not present, a staff member from the school was present in the room to assist with these issues and act as supervisor.

***Treatment fidelity.*** All tutoring sessions were audio recorded to ensure fidelity and all tutors filled out a self-checklist after each tutoring session to review program implementation and monitor their own fidelity. In addition, the researcher observed each group for at least part of the lesson each day. Two times throughout the semester the researcher completed a fidelity checklist during the observation to more closely examine implementation fidelity. A copy of both these checklists is included in Appendix C. Feedback was given after each observation. Additionally, the researcher stepped in and demonstrated steps in the lesson or error correction methods in order to increase accuracy of implementation.

***Tutor training.*** Tutor training took place as a six-hour session on a Saturday in a classroom at the local high school. The researcher conducted the training and all tutors attended the training session that was held in a classroom at the high school. Students learned the basic foundations for reading instruction as well as received training in the curriculum, *Phonics for Reading*. This training focused on the components of the curriculum and the correct implementation of each step in the lesson.

For each step in the lesson, students were taught the aspect of reading instruction that was being taught, phonemic awareness, phonics, or fluency. The importance of that step was emphasized and then the researcher demonstrated how to teach that part of the lesson. Tutors then practiced teaching each step to each other, and then demonstrated mastery of each step by teaching it to the trainer. Tutors were observed and practiced until fidelity of implementation was ensured.

During this session, tutors also received instruction in progress monitoring practices, as they were responsible for administering these probes to their students each week. Before being released from their training tutors had to demonstrate over 90% fidelity in both instruction and progress monitoring.

Finally, in one of the weeks prior to the beginning of tutoring, tutors met briefly with the researcher at the tutoring site. This meeting involved a discussion of materials handling and storage as well as an introduction to the classroom teacher and students they would be working with. During this session the tutors became familiar with the school protocols for checking in and out and had the opportunity to ask any questions.

Tutoring was carried out for nine weeks with a two-week break in the middle for fall intercession and two days off for Thanksgiving. With tutoring occurring three times a week for 30 minutes, this allowed for the potential for 13 hours of tutoring. However, with illness and general absenteeism on the part of both tutors and tutees, actual tutoring hours were less than 13 hours for most students, with an average of 10 hours per student across the nine weeks of tutoring.

### **Data Analysis**

There were four questions formed in an effort to determine the efficacy of implementing reading intervention by high school tutors. The analysis of these questions examined the decoding and comprehension abilities of students to determine growth across the study. Fidelity of treatment was also measured to ensure that tutoring was implemented correctly and consistently. Finally, the social

validity of the study was measured to help with future implementation. Social validity refers to the qualitative feedback received from teachers, tutors and tutees regarding their perceptions of program implementation and its sustainability in a school setting. In the following sections of the paper, each of the four questions will be addressed with detailed explanations of the selected analysis and the rationale for the analysis chosen. For all questions, descriptive statistics were examined as well as the following advanced statistics for each question.

Before beginning the intervention, students were pre-tested on all measures described previously. Pretest scores were examined for each group of students (control vs. experimental) to determine if there were significant differences between the two groups. A one way multivariate analysis of variance (MANOVA) was run to examine the linear combination of the four dependent variables measured; Word Identification, Word Attack, and Passage Comprehension using the WRMT-III as well as receptive vocabulary using the PPVT-IV.

Post intervention, students were tested again on all measures except the PPVT-IV and the results were examined to answer the following four questions.

- Question 1: To what degree does reading tutoring delivered by high school students increase the word reading abilities of elementary students as compared to a control group?
  - *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in word reading as measured by word attack and word identification skills.

Word reading is comprised of two sub skills, decoding and sight word recognition (Gough & Tunmer, 1986). In order to provide a comprehensive assessment of students' word reading abilities, both these aspects were examined through standardized measures and progress monitoring tools. The Word Attack subtest of the WRMT-III was used to measure decoding ability and the Word Identification subtest was used to measure sight word recognition ability. Raw scores were analyzed, as they are more sensitive to change. An analysis of covariance was conducted to examine the difference in post-test scores between groups with pretest scores entered as a covariate.

In addition to the standardized test measures, tutees were given weekly progress monitoring measures. The Concept Mastery Probes measured the students' decoding ability of words containing the concepts covered in Level I of *Phonics for Reading* (Archer et al., 2011). The Word Identification Fluency probes measured their ability to read sight words. The data from these progress monitoring probes were plotted on graphs so that gains could be visually analyzed. First and second grade students' data were plotted on graphs using different scales. First grade graphs were plotted on a scale of 30 and second graders were plotted on a scale of 70. Additionally, trend analysis was computed using SPSS to analyze the type of trend reflected in the data as well as to examine the slopes of the trend lines and determine if there were differences between the slopes of the control and experimental groups.

- To what degree does reading tutoring delivered by high school students

increase the comprehension abilities of elementary students as compared to a control group?

- *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in comprehension.

Using the passage comprehension subtest of the WRMT-III at both pre and post testing, the change in comprehension between the experimental and control group were examined using an ANCOVA examining post-test differences between groups with pretest as the covariate.

- What level of implementation fidelity can high school students achieve when tutoring struggling readers using a structured/scripted curriculum?
  - *Hypothesis:* High school students will be able to achieve 90% implementation fidelity as measured by the Fidelity Checklist.

Treatment fidelity was examined throughout the study in several ways. First, the researcher was present at nearly every tutoring session and walked between groups to observe the implementation and any behavior problems. If any problems were observed, the researcher stepped in and demonstrated correct implementation or error correction methods. Notes were consistently taken regarding any problems and these were addressed with the tutor immediately following all sessions. Follow up observations were completed to ensure correct implementation. Additionally, every tutoring session was audio recorded so sessions could be listened to at any point to check treatment implementation.



In order to measure the treatment fidelity of tutors, two tutoring sessions by every tutor were either observed live, or the researcher listened to one of the recorded sessions. The fidelity checklist was used to score each session. A percentage was calculated using the number of steps correctly implemented correctly divided by the total number of steps. The percentages for each tutor were averaged and reported, both per tutor and for the group as a whole.

- Is the tutoring format acceptable to tutees, tutors and school personnel?
  - *Hypothesis:* When examining percentages on exit surveys completed by tutees, tutors and school personnel, it is expected that 80% of responses will indicate acceptance by participants.

The social validity of the study was examined through the administration of a brief survey given to all participants (i.e., teachers, tutors, and tutees). Questions were presented in both a rating scale format as well as open response questions.

Responses to the rating scale questions were reported as a percentage of response and open response questions were examined in an informal qualitative format in an effort to provide direction for further research studies.

## CHAPTER IV

### Results

This study examined the impact of training high school tutors to provide reading intervention to struggling first and second grade students. Four research questions were outlined to look at the process and outcomes of the study. This chapter begins with an overview of descriptive statistics regarding participants and then will address each question individually. All scores analyzed from standardized measures (i.e., WRMT & PPVT) for the purposes of this study were raw scores. Raw scores are generally used in educational research, as they are a more sensitive measure of change than standard scores (e.g. Gottardo, Stanovich & Siegel, 1996; McCandliss, Beck, Sandack & Perfetti, 2003). All analyses were conducted using an alpha of .05. Pre and post-test means, standard deviations and gains are reported in Table 2.

Pretest group differences were examined using a one way multivariate analysis of variance (MANOVA) using Word Attack, Word Identification and Passage Comprehension from the WRMT-III, as well as receptive vocabulary from the PPVT-IV as the dependent measures. A one-way MANOVA revealed there were no significant differences for group on the linear combination of the four dependent variables,  $F(4, 21) = 0.406, p = 0.802, Wilks \lambda = 0.93$  indicating that both groups were not significantly different on pretest scores. Because posttest scores were to be analyzed individually, pretest scores on each outcome measure were examined individually as well using one-way analysis of variance (ANOVA).

Table 2.

*Pre-test and Post-test Means and Standard Deviations for Raw and Standard Scores for WRMT-III subtests and PPVT-IV (N = 26)*

Group	Measure					
	Raw Scores			Standard Scores		
	Pre-test	Post-test	Gain	Pre-test	Post-test	Gain
Word Attack						
Control						
<i>M</i>	2.46	2.77	0.31	88.00	84.38	-3.62
<i>SD</i>	2.33	2.65		8.13	8.81	
Experimental						
<i>M</i>	2.38	4.54	2.16	87.69	92.08	4.39
<i>SD</i>	2.53	2.18		9.59	8.94	
Word ID						
Control						
<i>M</i>	6.46	7.62	1.16	83.23	81.77	-1.46
<i>SD</i>	5.95	5.87		12.47	14.68	
Experimental						
<i>M</i>	5.23	9.38	4.15	82.08	87.15	5.07
<i>SD</i>	4.53	4.31		7.97	10.71	
Comprehension						
Control						
<i>M</i>	4.00	5.00	1.00	86.38	82.92	-3.46
<i>SD</i>	2.31	4.22		10.85	8.81	
Experimental						
<i>M</i>	4.23	5.69	1.46	86.92	87.15	0.23
<i>SD</i>	2.98	3.71		6.76	9.1	
PPVT-IV						
Control						
<i>M</i>	105.15			94.85		
<i>SD</i>	17.97			10.04		
Experimental						
<i>M</i>	101.77			93.15		
<i>SD</i>	93.15			11.83		

*n* = 13 for both groups

All individual ANOVAs were also nonsignificant, with Word Attack,  $F(1, 24) = .01, p = .94$ , Word Identification,  $F(1, 24) = .35, p = .56$ , Comprehension,  $F(1, 24) = .05, p = .83$ , and PPVT-IV,  $F(1, 24) = .18, p = .68$ . Additionally, Chi square analyses were run on the variables of grade and gender within group with nonsignificant results for both,  $\chi^2(1) = 0.16, p = 0.69$  and  $\chi^2(1) = 2.48, p = 0.12$ , respectively, indicating that these characteristics were distributed evenly across groups. Based on the MANOVA as well as the individual ANOVAs it can be concluded that the groups were not significantly different at pretest.

### **Word Reading Ability**

The first question was whether tutoring provided by high school students could increase the word reading ability of first and second grade students.

Specifically, the question and hypothesis under examination are:

- To what degree did reading tutoring delivered by high school students increase the word reading abilities of elementary students as compared to a control group?
  - *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in word reading as measured by word attack and word identification skills as compared to a control group.

Both experimental and control group students were pre and post tested with standardized measures of both word attack and word identification. All students were also progress monitored with a researcher created measure of decoding that aligned to the curriculum being taught. Standardized subtest raw scores were used

in an analysis of covariance with group (treatment vs. control) as the between-subjects factor and subscale posttest scores as the dependent variable. Pretest subtest scores were entered as the covariate in order to control for the impact that pretest scores might have on post-test outcomes. Adjusted marginal means are reported in Table 3.

Table 3.

*Adjusted post-test means for WRMT-III subscale raw scores using pre intervention scores as the covariate*

	Control	Experimental
	<i>Adj. Mean</i>	<i>Adj. Mean</i>
Word Attack	2.72	4.57
Word Identification	7.07	9.93
Passage Comprehension	5.10	5.59

*n* = 13 for both groups

**Word attack.** Differences in post-test word attack ability were analyzed by ANCOVA using the Word Attack subscale of the WRMT-III with pretest scores entered as the covariate. As Table 1 demonstrates, experimental students made greater gains in word attack ability than control students. There was a significant effect for group after controlling for the effect of pretest score,  $F(1, 23) = 7.22, p = 0.01, d = 0.76$ . The gain scores from Table 1 as well as the change means represented in Figure 1 show that students who received the tutoring made greater gains than control students. Additionally, an effect size of 0.76 indicates that the intervention had a moderate to large effect size on the word attack ability of students in the experimental group.

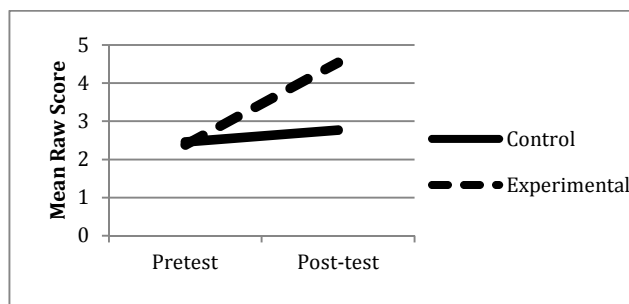


Figure 1. Mean score differences on WRMT-III word attack

Both groups of students were also progress monitored on word attack skills on a weekly basis and these scores were graphed so visual analysis of progress could be carried out. These graphs can be seen in Figure 2 for first grade and Figure 3 for second grade. Please note that progress is graphed separately for each student. First and second grade students' scores were graphed on different scales to make visual analysis of data easier. First grade students were graphed on a scale of 30, while second grade students were graphed on a scale of 70. Graphs are labeled according to grade and student number, so 1-1 indicates first grade, student one to make discussion of student results easier.

Simple visual analysis indicates that for both first and second grade students, the slope of most control group students remained almost flat while experimental students made steady progress in an upward trend. In fact, two control students, 2-1 and 2-11, had slightly negative slopes. The average slope for the control group was 0.20 while the slope for the experimental group was 1.40 as pictured in Figure 4.

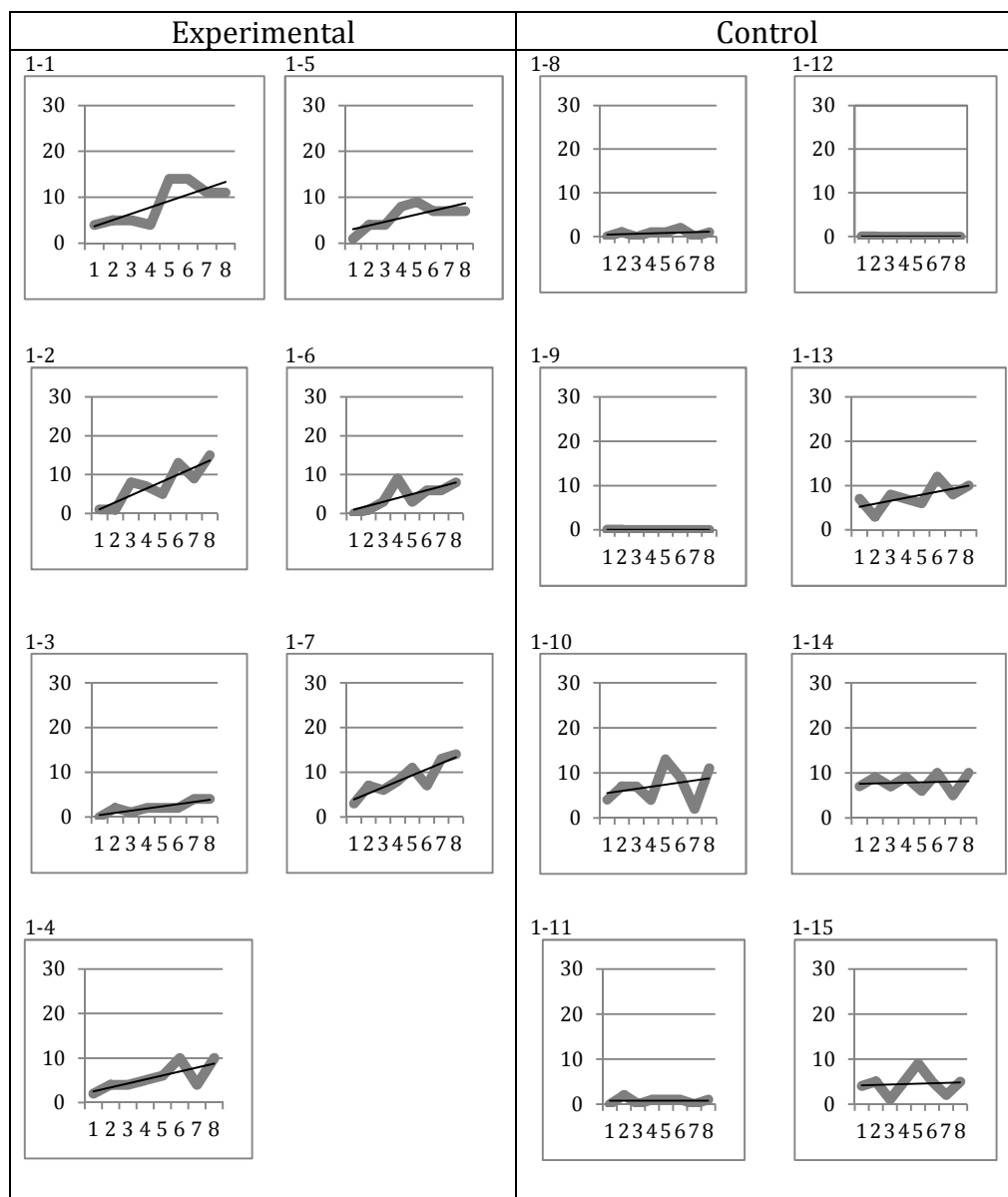


Figure 2. First Grade Word Attack Progress Monitoring  
 X-Axis represents week  
 Y-Axis represents words read correctly

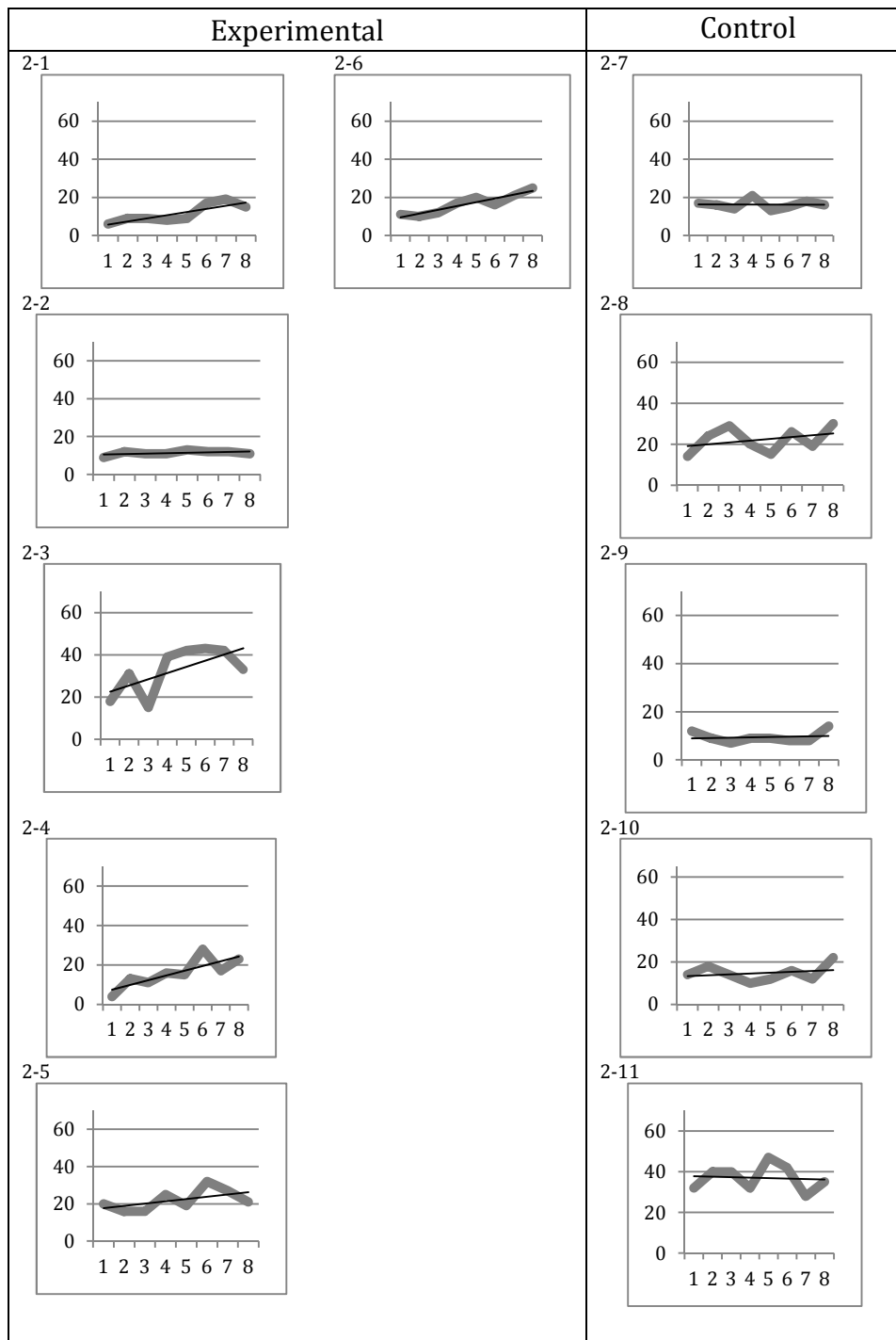


Figure 3. *Second Grade Word Attack Progress Monitoring*  
*X-Axis represents week*  
*Y-Axis represents words correctly read*



In addition to examining the progress of individual students, the average slope for each group was computed and compared and trend analysis was run on the data for the full sample. When trend analysis was run on word attack progress monitoring data, it was found that there was a significant linear trend,  $F(1, 24) = 49.32, p < .001$ . Additionally, there was a significant interaction effect between word attack and group,  $F(1, 24) = 27.79, p < .001$ , indicating that the difference in slopes between the experimental and control group was statistically significant. Significantly different slopes between the two groups indicated that the change rate on the word attack progress monitoring probes was different for the groups.

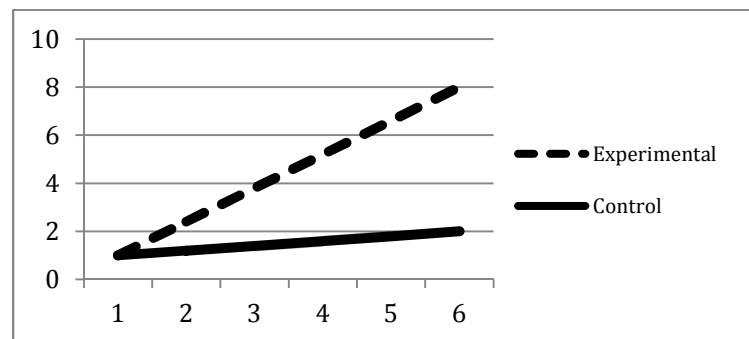


Figure 4. Mean Word Attack Progress Monitoring Slopes

**Word identification.** Word identification, or sight word reading ability, was measured using the Word Identification subtest of the WRMT-III. Table 2 indicates that experimental students also made greater gains on the word identification subtest of the WRMT-III. Results of the ANCOVA indicated that there was a significant effect of group on Word Identification post-test scores when controlled for pretest scores,  $F(1, 23) = 11.29, p = .003, d = 0.55$ . Figure 5 illustrates the differences in scores between groups. Additionally, the effect size of  $d = 0.55$

indicates that the effect of the intervention on the achievement of experimental students had a moderate effect.

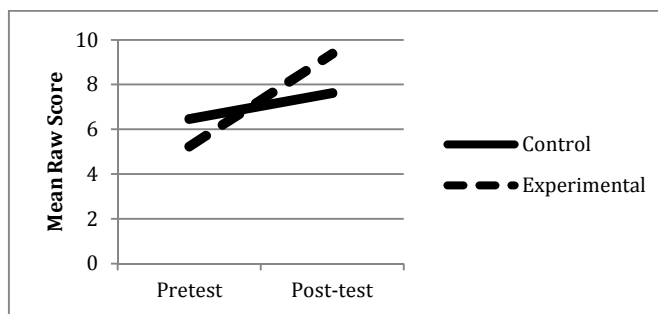


Figure 5. Mean score differences on WRMT-III word identification

Students were also progress monitored on word identification ability using the Word Identification Fluency (Fuchs, Fuchs, & Compton, 2004). Progress monitoring graphs are pictured in Figures 6 and 7 for first and second grade students, respectively. The average slope for the control group was 0.84, while the experimental group was 0.91. Trend analysis on progress monitoring data revealed a significant linear trend,  $F(1, 24) = 22.27, p < .001$ . However, the interaction of group and slope was found to be non significant,  $F(1, 24) = .046, p = .83$ , indicating that the difference in slope between the experimental and control group was not statistically significant.

The results of the ANCOVAs indicated that students who received the tutoring made significantly more progress in word reading abilities than those who did not receive the tutoring.

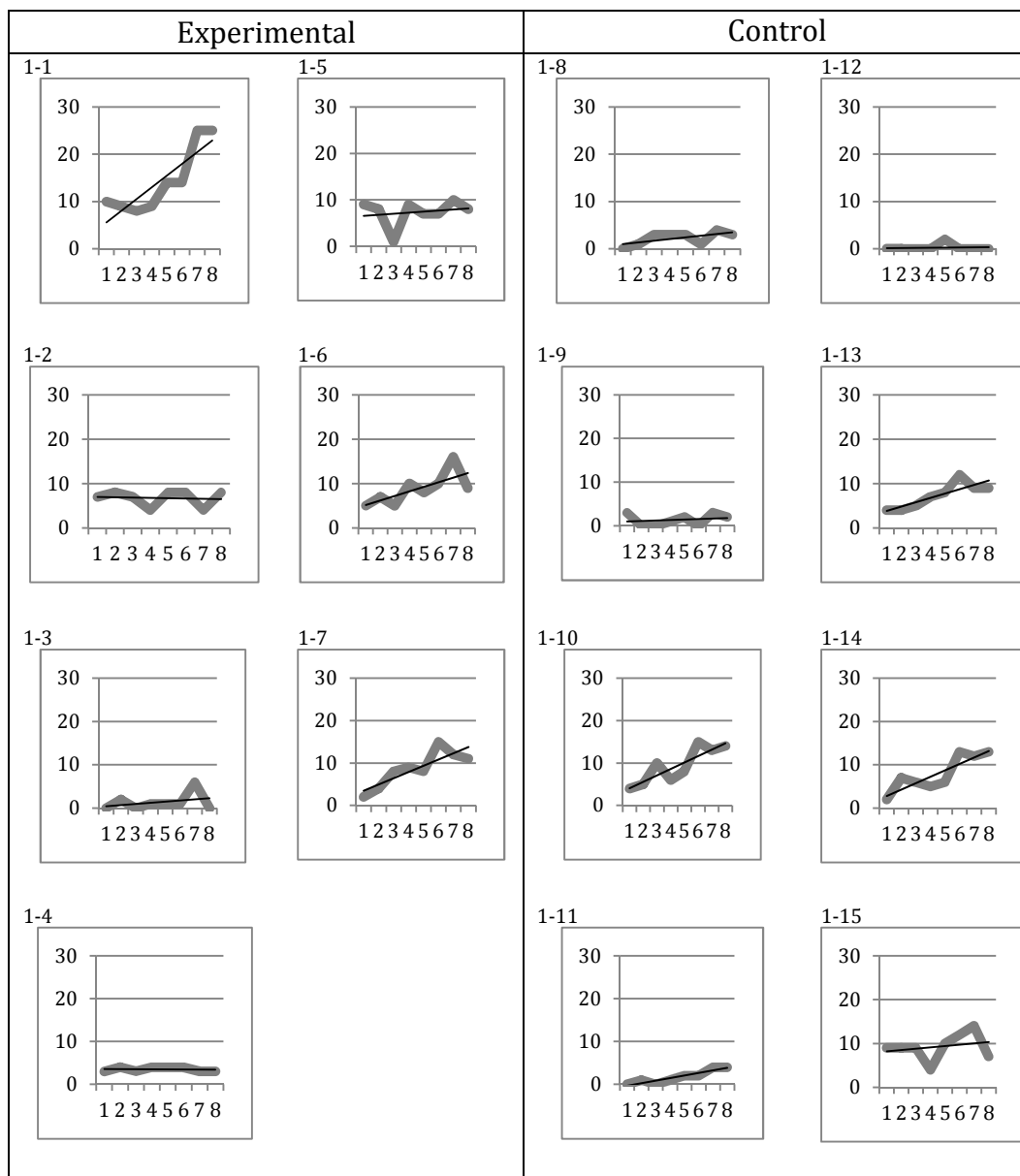


Figure 6. *First Grade Word Identification Fluency*  
 X-Axis represents week  
 Y- Axis represents words correctly read

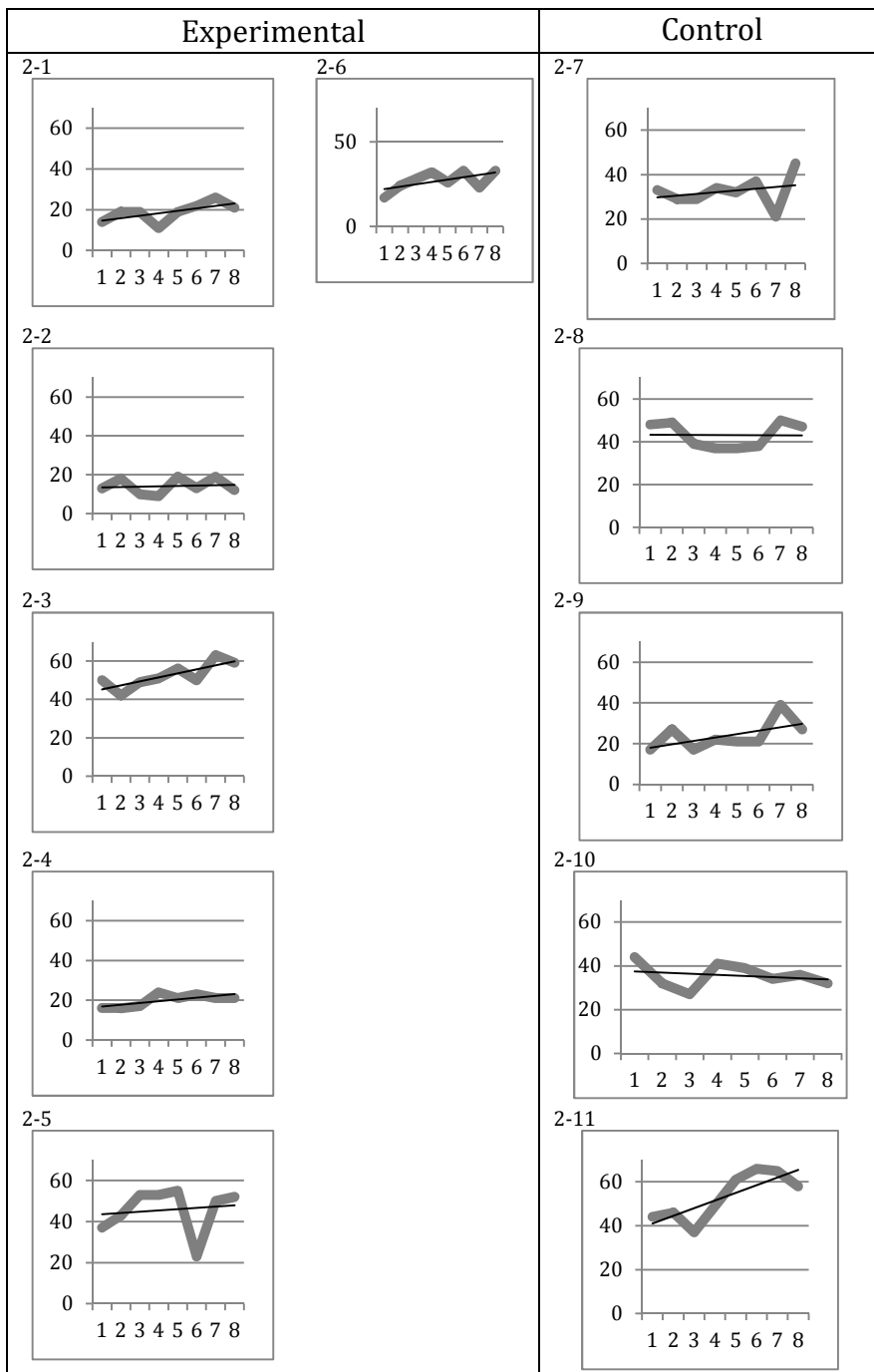


Figure 7. Second Grade Word Identification Fluency  
 X-Axis represents week  
 Y- Axis represents words correctly read

## Comprehension Ability

Question two examined the effects of the intervention upon the comprehension ability of the elementary students. The stated research question was:

- To what degree did reading tutoring delivered by high school students increase the comprehension abilities of elementary students as compared to a control group?
  - *Hypothesis:* Elementary students tutored by high school tutors will demonstrate increased abilities in comprehension.

Comprehension ability was measured using the Passage Comprehension subtest of the WRMT-III. Table 2 indicates that students in the experimental group made greater gains on this subtest than the control group. However, the results of the ANCOVA indicated that there was no significant effect of group,  $F(1, 23) = 0.15$ ,  $p = 0.71$ ,  $d = .14$ , when pretest scores were controlled for.

## Fidelity of Implementation

Question number three examined the ability of high school tutors to implement an intervention with fidelity.

- What level of implementation fidelity can high school students achieve when tutoring struggling readers using a structured/scripted curriculum?
  - *Hypothesis:* High school students will be able to achieve 90% implementation fidelity as measured by the Fidelity Checklist.

All tutoring sessions were audio recorded and tutors completed a self-check with every lesson taught. In addition, the researcher listened to the audio recording of two sessions for each tutor, one from the beginning and one from the end, and determined the percentage of steps correctly implemented using a checklist created for the purpose. Table 4 presents the results of these fidelity checks.

All tutors increased their fidelity from the beginning of the study to the end. Average beginning fidelity was 77.33%. As tutoring continued, tutors were observed and proper implementation was modeled. By the end of the study, average implementation fidelity was 93.17%, thus hypothesis three was supported.

Table 4

*Tutor Fidelity by Percent*

Tutor	Percent Fidelity	
	Beginning	End
Tutor 1	74%	95%
Tutor 2	73%	95%
Tutor 3	87%	90%
Tutor 4	61%	92%
Tutor 5	85%	92%
Tutor 6	84%	95%
Average	77.33%	93.17%

### **Social Validity**

The third and final question of the research study focused on the social validity of project. In order to make an intervention such as this sustainable, it is important to take into account the experiences of the teachers and students who participated. The fourth question asked was:

- Is the tutoring format acceptable to tutees, tutors and school personnel?
  - *Hypothesis:* When examining percentages on exit surveys completed by tutees, tutors and school personnel, it is expected that 80% of responses will indicate acceptance by participants.

To answer this question teachers and tutors filled out a questionnaire with a mixture of Likert and open-ended questions, while the researcher interviewed tutees during their post testing session. Answers from these surveys and interviews are included in Appendix D. Results of Likert answers were reported as percentages rather than as the number of responses to make interpretation easier since some participants did not answer all questions.

**Teacher responses.** Likert responses from teachers were positive overall. Teachers felt that their students enjoyed the intervention and they felt that it was beneficial. The only question with a negative answer involved the level of classroom disruption when students were pulled from class. Because students were often in different classrooms when the tutors came to pick them up, finding them was often disruptive to the teachers. However, overall teachers reported satisfaction with the intervention and stated that they would be willing to participate again, given the chance.

The open-ended questions provided more information regarding teachers' perceptions of the program. Teachers all stated that they saw improvements in their students' reading abilities as well as their confidence in their reading ability. The biggest concern teachers expressed was the difficulty of scheduling the tutoring

during the school day. Additionally, teachers expressed a desire for more consistent and specific communication with tutors regarding the intervention and what their students were learning.

In summary, teachers were mostly very pleased with the intervention and the results it produced. There was some concern of the scheduling of the intervention and the amount of class time that it took. Additionally, finding a way for teachers and tutors to communicate consistently would have been valuable. However, all teachers indicated that they were satisfied enough with the program that they would participate again.

**Tutor responses.** Tutor responses were also extremely positive. All Likert responses were marked as “Agree” or “Strongly Agree.” All tutors felt the program was worthwhile and that they made a difference in the reading ability of their students. All tutors reported that they felt the training and support they received was adequate throughout the program. One hundred percent of responses indicated that all tutors would recommend the program to other students.

Answers to the open-ended questions proved to be similar to the responses teachers gave. Tutors reported that they enjoyed working with their students and saw progress in their tutees. Tutors also expressed that they were happy to have been a part of improving the reading ability of young students. However, scheduling was also a problem for the tutors. Several expressed that it was difficult to miss class or other school events, such as assemblies to participate in tutoring. Additional frustrations included discipline problems with students, not feeling like



they had enough time with the tutees, and a desire for more hands-on practice with the materials before beginning tutoring.

Though tutors did express some frustrations with the way the intervention was carried out, such as scheduling that caused them to miss class and feeling unprepared to handle discipline issues, overall their feedback was very positive. Adding additional training with the materials as well as additional training for handling behavior problems would be helpful in the future. However, even with these frustrations all tutors said they would participate again and would recommend the program to other students.

**Tutee responses.** Unlike the teachers and tutors, tutees were interviewed by the researcher rather than independently filling out a survey. All students stated that they enjoyed the program and would choose to participate again if given the chance. When asked what their favorite part of the program was, most students responded that they liked the chance to work with a high school student. Other answers included getting to use whiteboards, getting stickers, and getting their very own book to work in. Only one tutee reported a dislike with the program which was a particular practice activity he struggled with; the fill-in-the-blank activities. All students reported that they felt they learned to read, spell, or write better because of their participation in the program. When asked what would have made the program better, student responses were varied. One student reported wishing she had been less silly in the beginning, so she would have learned more. One student

said having games interspersed with the instruction would have made it more fun. Additional answers involved wanting more spelling practice and longer text to read.

Overall, results from all participants were positive. Everyone said that they would choose to participate again if given the chance and they were glad they had the opportunity. The information gained from these surveys will provide valuable information for future work.

## CHAPTER V

### Discussion and Conclusions

The final chapter of the dissertation begins with a brief summary of the study, including a restatement of the problem and an overview of the research questions. The majority of the chapter will focus on conclusions that can be drawn from the analysis presented in the previous chapter. The chapter will conclude with the limitations of the study as well as recommendations for future research.

#### **Study Summary**

The lack of reading proficiency in the United States has led to increased research into early intervention and prevention of reading failure (National Reading Panel, 2001). Programs such as The America Reads Challenge (1998) have called for the use of paraprofessionals and volunteers to assist with the reading instruction of students. While research has shown that nonprofessionals can have a positive impact on students' reading ability (Vadasay, Sanders, & Peyton, 2006; Vadasay, Sanders, & Tudor, 2007), budget cuts often prevent the hiring of paraprofessionals and tutors are difficult to recruit and retain (Center on Budget and Policy Priorities, 2012). A possible solution to the shortage of adult interventionists has been to recruit other students to provide supplemental instruction (Chiang, Thorpe, & Darch, 1980; Glaser, 2002; Jacobson et al., 2001). The purpose of this study was to identify whether high school students could potentially provide reading intervention to students when paraprofessionals are not available.

Four research questions were outlined to identify the effectiveness of the intervention. The first question examined whether the word reading abilities of students, as measured by word attack and word identification, could be increased through intervention provided by high school students. The second question asked whether the comprehension abilities of students could be increased. The third question looked at whether high school students could be taught to implement reading curriculum with fidelity. The final question examined both the positive and negative aspects of the intervention as reported by all participants.

To answer these questions, 26 first and second grade students were selected to participate in the study. Students were randomly assigned to either an experimental or control group. Students in the experimental group received nine weeks of reading instruction provided by high school tutors. Students were pretested and post-tested on measures of reading ability as well as progress monitored on a weekly basis. Analysis of Covariance (ANCOVA) was conducted with the post-test scores using pretest as the covariate. Additionally, all tutoring sessions were recorded and two lessons were listened to and scored by the researcher using a checklist to examine fidelity of implementation. Finally, all participants answered a number of survey questions regarding their observations and feelings about the program. The results of these analyses will be discussed in the following section.

## Discussion and Interpretation of Findings

The findings discussed and interpreted in this section are organized by outcomes considered in the study: word reading, comprehension, tutor fidelity, and social validity.

**Word Reading.** The first research question was: To what degree does reading tutoring delivered by high school students increase the word reading abilities of elementary students as compared to a control group? According to Gough and Tunmer (1986), word reading ability is a combination of word attack (decoding) and word identification (sight word ability). Therefore, in order to address this question, standardized and progress monitoring data were collected on both of these aspects of reading ability. When compared to a control group, students in the experimental group performed significantly better on the standardized measures of both word attack and word identification as measured by the Woodcock Reading Mastery Test-III (Woodcock, 2011). In fact, the effect sizes for these measures were both in the medium range with word attack at  $d = 0.75$  and word identification at  $d = 0.55$ . Trend analysis conducted with word attack progress monitoring data indicated that the slope of experimental students was significantly higher than that of control students. While experimental students made gains on word identification progress monitoring, it was not significantly different from the progress made by control students. These results support the hypothesis that tutoring provided by high school students has the potential to increase the word reading abilities of first and second grade students.

These findings are consistent with both general tutoring research as well as cross-age tutoring research. The meta-analyses examined in Chapter 2 found that tutoring programs focusing on word reading skills reported effect sizes in the small to medium large range,  $d = .41-.76$  (Cohen, Kulik, & Kulik, 1982; Elbaum, Vaughn, Hughes, & Moody, 2000; Ritter, Barnett, Denny, & Albin, 2009; Slavin, Lake, Davis, & Madden, 2011). The effect sizes for both word attack and word identification are on the upper end of this range. Only a few of the articles on cross-age tutoring reviewed for this study reported effect sizes or enough information to calculate effect sizes, with a range of  $d = .22-1.54$  (Hilger, 2000; Top, 1984; Topping, Miller, Thurston, McGavock, & Conlin; 2011). The results of this study are right in the middle of this range and consistent with research indicating that cross-age tutoring can effectively increase the word reading ability of elementary students.

Many previous studies on word reading effects in cross-age tutoring have used a single-subject or time series design (Barbetta & Miller, 1991; Chiang et al., 1980; Giesecke, Cartledge, & Gardner, 1993; Glaser, 2002). Due to the difference in methodology, it is difficult to make direct comparisons between the studies and the current one. However, all the results of those studies are consistent with the results from this study in that these studies indicated that tutees made progress on word reading due to the cross-age tutoring.

**Comprehension.** The second research question was: To what degree does reading tutoring delivered by high school students increase the comprehension abilities of elementary students as compared to a control group? To answer this

question, post-test scores on the Passage Comprehension subtest of the WRMT-III were compared using ANCOVA with pretest scores entered as the covariate. The results of this analysis indicated that there was no significant difference in comprehension ability between groups. This finding is not surprising for several reasons.

The first reason this finding is not surprising is that the reviewed general tutoring meta-analyses indicated that although tutoring can cause gains in comprehension ability, the effects are smaller, at least for students in the lower grades. Effect sizes ranged from .18 - .24 for this age group (Cohen et al., 1982, Ritter et al., 2009; Slavin et al., 2011). Elbaum et al. (2000) reported larger effect sizes ( $d = 2.41$ ) when older students were being tutored. Cross-age tutoring studies present no conclusive findings. Most studies focusing on comprehension gains measured the gains in tutors, not tutees, and indicated that these tutors can achieve comprehension gains through participation (Davenport, Arnold, & Lassman, 2004; Jacobson et al., 2001; Labbo & Teale, 1990; Van Keer, 2004). Only four studies found significant gains in tutee comprehension abilities (Hattie, 2006; Jensen, 1991; Taylor, Hanson, Justice-Swanson, & Watts, 1997; Topping, Miller, Thurston, McGavock, & Conlin, 2011). Three of these studies were conducted over a much longer time period than the current study, with Jensen (1991) running 46 hours, Topping et al. (2011) running one year and Hattie (2006) running two years. Only Taylor et al. (1997) had a study length similar to the current study ( $M = 10.5$  hours for both studies) and reported student gains. However, the outcome measure

analyzed combined word reading and comprehension ability, rather than being a pure comprehension outcome. Based on this information, it can be concluded that comprehension gains may require longer intervention periods than this study allowed. This evidence from previous research indicated that comprehension gains may be more difficult to achieve in tutoring situations, at least with similar populations of students.

The second, and more likely reason for the lack of comprehension gains, is that *Phonics for Reading* (Archer, Flood, Lapp, & Lundgren, 2011) is not a focused comprehension program. The focus of the curriculum is word reading, so the gains in word reading rather than comprehension are understandable. When pre and post test gain scores are compared, experimental students made greater raw score gains than control students, however, these gains were small ( $d = 0.14$ ) and were not statistically significant. Many of the students beginning the study were nonreaders, so as their word reading ability increased, it is expected that their comprehension would increase somewhat, even without direct comprehension instruction. However, in the future, if greater comprehension gains are desired, a specific comprehension aspect should be included within the intervention setting.

**Tutor Fidelity.** Question number three asked: What level of implementation fidelity can high school students achieve when tutoring struggling readers using a structured/scripted curriculum? Tutoring research indicates that intervention implemented with a high degree of fidelity produces greater gains than interventions with low fidelity (Elbaum et al., 2000). In fact, Durlak and DuPre



(2008) found that studies implemented with a high degree of fidelity averaged a 0.34 greater effect sizes than those of low fidelity. If high school students are asked to provide supplementary instruction to elementary students it is important to ensure that they are capable of providing the highest quality instruction possible, therefore, examining fidelity is important.

Throughout the length of the study, all tutoring sessions were recorded. The researcher listened to two lessons by each tutor, one from the first two weeks of the study and one from the last two weeks. These lessons were coded on a fidelity checklist designed to match the steps in the curriculum. A percentage was calculated by determining the number of steps completed correctly out of total number of step. Fidelity varied by tutor, however, average fidelity at the beginning of the study was 77.33% with a range of 61% to 87%. Ending fidelity averaged 93.17% with a range of 90% to 95%.

The low fidelity numbers for the beginning of the study are somewhat surprising. Tutors participated in a full day of training covering the curriculum. They observed each step of the lesson being taught, they practiced teaching each other and finally had to teach the step to the researcher to ensure understanding. Before tutors were released from training they had to demonstrate over 90% fidelity with the curriculum. Because all tutors had demonstrated this at training, the drop in scores between training and tutoring is surprising. However, due to a scheduling error tutoring was postponed a week after the training, and after one week of tutoring, the district had a two week fall break. These breaks in initial

tutoring may explain the low levels of fidelity. However, even studies with 60% fidelity have been found to provide positive outcomes (Durlak & DuPre, 2008) and all beginning fidelity scores were above this level.

Upon closer examination of the fidelity checklists, most of the errors were made during the spelling portion of the program. The spelling step was very technical and most students skipped the explicit instruction linking the sounds to the letters and simply asked their students to spell the whole word. Across all groups this was the step where the researcher most frequently stepped in to provide assistance and monitoring. In the future, more training time will be spent ensuring full understanding of this step.

Fidelity scores at the end of the study were significantly better. All students achieved above 90%. According to Durlak and DuPre (2008) average fidelity is 80% or greater, with no study achieving 100%, therefore this fits in with the current research and is an acceptable level. There was constant and consistent oversight of these tutors during all tutoring sessions. Any time a break from fidelity was observed the researcher stepped in, pointed out the error and demonstrated correct implementation. This consistent feedback may have led to the high fidelity scores at the end of the study. Keeping in mind that research has demonstrated that interventions implemented with a higher degree of fidelity achieve greater results (Durlak & DuPre, 2008; Elbaum, 2000), it is probable that the care taken to implement with fidelity led to the gains in word reading.

**Social Validity.** An important question for the researcher was not only whether this intervention is effective, but also whether it is feasible for this type of intervention to be implemented on a larger scale. This was examined by answering the fourth question: Is the tutoring format acceptable to tutees, tutors and school personnel? All participants were asked to answer a series of questions about their likes and dislikes about the tutoring format. Responses were very positive. All participants indicated that the intervention was worthwhile and provided positive outcomes. The most common positive responses were that the intervention provided additional help to students who would otherwise not have received it, increased the reading ability of the tutees, and built positive relationships between tutors and tutees. All participants indicated that they would participate again if given the chance.

However, there were several suggestions given that need to be addressed. The most common problem with program from the perspective of both tutors and teachers was the difficulty of scheduling. Tutors missed class three times a week to participate and teachers gave up class time for their students to participate. This caused a great deal of stress for many participants. In several of the reviewed studies, the problem of tutor scheduling was solved by creating a tutoring class for high school students, rather than allowing them to leave class (Glaser, 2002; Jacobson et al., 2001; Paterson & Elliott, 2006). This would not only solve their scheduling problems, but also give them class credit for participation. Solving scheduling problems at the elementary school may not be as straightforward. Class

time is tightly regulated and asking teachers to give up instruction time is difficult. However, as teachers see the improvement in student scores due to the intervention, it is hoped that the benefits will outweigh their concerns and they will feel more comfortable giving up their class time.

The other suggestion given by tutors and teachers was that there be regular communication directly between tutors and teachers. During this study, the researcher acted as a liaison between the two groups simply because scheduling problems didn't allow for tutors to talk to teachers each day. However, setting up a communication log where tutors could record what they were teaching and teachers could record concerns would have allowed for direct communication in spite of scheduling problems.

Reviews of the survey results as a whole indicate that the program was well received by all participants. These results indicate that the program has the potential to be continued on a larger scale.

### **Cost Effectiveness of Intervention**

One of the arguments for cross age tutoring presented in this study referred to the cost effectiveness of this type of intervention as opposed to traditional intervention formats involving paraprofessionals or teachers. The average wage for paraprofessionals in this area of Tennessee is \$11.00 per hour. During this study, seven groups of students received an hour and a half of intervention per week equaling 10.5 hours. This equals a weekly amount of \$115.50 for paraprofessional salaries. Just through the nine weeks of this study that is a cost of \$1,039.50.

Unlike regular intervention formats, cross age tutoring has very few costs. The total curriculum cost for this study was a one-time fee of \$210.00. All other materials are commonly found in schools, i.e., white boards, markers, timers and pencils. In this study there was no cost for supervision, however, even with a paid supervisor committing an hour and a half a day (tutoring sessions ran concurrently with up to 5 tutors tutoring at one time) to supervise the intervention, the personnel cost would only be \$445.50 for the nine week study, a savings of \$594.00. If a school year is approximately 40 weeks long, total cost for personnel and curriculum would be \$4,830.00 to provide intervention for thirteen students, while cross age tutoring would be \$2,190.00, a savings of \$2,640.00 or nearly 50%. Table 5 provides a comparison of both the cost of this intervention with the cost of 9 weeks provided by paraprofessionals as well as the costs of a full school year of paraprofessional intervention compared to cross age tutoring with a single paraprofessional supervisor. These costs are based on providing intervention to 13 student (as provided tutoring in this study), though all schools have more students who would benefit from additional intervention.

The results of this cost analysis provide an argument for implementing cross age tutoring. For almost half the cost, one paid supervisor can oversee the intervention of 13 students in just an hour and a half a day. With school budgets being cut on a regular basis (Center on Budget and Policy Priorities, 2012), finding lower cost ways of implementing interventions is becoming more important and

cross age tutoring provides not only extra help for tutees, but teaching experience for high school tutors.

Table 5

*Cost Analysis Comparing Regular Intervention to Cross Age Tutors*

	Curriculum	Wage	Total Cost
<u>9 week study</u>			
Regular Intervention	\$210.00	\$1,039.50	\$1,249.50
Cross Age Tutors	\$210.00	\$0	\$210.00
Difference			\$1,039.50
<u>40 week school year</u>			
Regular Intervention	\$210.00	\$4,620.00	\$4,830.00
Cross Age Tutors	\$210.00	\$1,980.00	\$2,190.00
Difference			\$2,640.00

### Limitations

Generalizability may be affected by the supervisor's in-depth knowledge of reading research and implementation. The researcher has extensive experience working with struggling readers and has spent considerable time researching best practices in reading instruction. Since she was the tutor trainer and supervisor, there may be generalizability issues for locations where a supervisor has less experience or background knowledge in reading instruction. Other factors related to implementation that may limit generalizability are the use of a highly scripted curriculum, the in-depth tutor training and the closely monitored supervision of the

tutors. If any of these factors were not included in a future study, it could significantly change the outcome.

A second limitation involved the number of hours of tutoring provided to students. Though there was a possibility of 15 hours of tutoring in the ten week time period, school vacations, illnesses and various class conflicts on the part of both the tutors and tutees, the number of tutoring hours was reduced to an average of 10 ( $SD = 1.12$ ).

Third, though the study was an experimental study with a randomly selected experimental and control group, the small sample size reduces the ability for the study to be generalized to the larger population. Careful consideration was taken to select students in the control and experimental groups from within each classroom to control for variables such as teacher instructional effects. However, given the small sample size, the study can only be viewed as a first step in the process of answering the research questions rather than a definitive answer to whether the program is effective for other populations.

A final limitation of this study is the specific location the sample was taken from. All students participating in the study resided in a small, rural town in Middle Tennessee. Because a sample was only taken from one school in one small community, it is difficult to generalize the findings to locations that may differ greatly from this sample.

### **Suggestions for Further Research**

The results of this study indicate that high school students can increase the reading ability of first and second grade students. However, there are several ways this study could be extended. As mentioned previously, this study did not include an explicit comprehension step. While this study indicates that high school tutors can increase word reading ability, future research studies should include a comprehension aspect as well in order to provide a more comprehensive picture of reading ability.

Another aspect unique to this study was the supervisor's level of expertise in reading. If this study is to be replicated in schools, the person assigned to oversee tutors may not have the same level of knowledge as in this study. Examining how supervisor knowledge relates to outcomes would provide information regarding who is best suited to provide this oversight.

A final suggestion for future research is to look at how increased tutor training may affect outcomes. This study was carried out with tutors receiving six hours of training. This training allowed them to feel comfortable with the curriculum, but not with the reading process as a whole. It would be interesting to examine if outcomes are changed if tutors are provided with a more comprehensive training in the reading process.

Finally, while the results of this study are promising, the small sample size does not necessarily allow for generalization to entire populations and does not provide high power for statistical tests. Replicating this study with a much larger



group of students and tutors would provide more powerful evidence that the intervention is effective with other populations.

### **Summary**

In summary, this study provides promising evidence that high school students can effectively provide supplementary reading instruction to elementary students. Results of the study indicated that high school tutors were particularly effective in increasing word reading abilities of students. In addition, the study showed that, given oversight from a trained supervisor, high school tutors can provide intervention with a high degree of fidelity and in a way that has gained approval from all participants. In addition to the findings of this study, recruiting high school students as reading tutors is very cost effective. When all of these factors are considered together, it appears that the use of high school students as reading tutors merits further investigation.

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APPENDICES

## Appendix A

**Concept Mastery Probes**

sad	fix	tap	mop	Jim
bus	list	lump	bath	tack
hen	fell	went	pump	hiss
yes	ask	cash	path	doll
husk	bump	hill	tuck	path
mend	duck	dot	hem	tap
send	wind	deck	fish	fuss
jazz	rash	off	rig	cod
ham	with	hiss	rack	less
gush	moth	neck	web	mug

## Appendix B

**Social Validity Surveys**

## Tutee Interview Questions

1. Did you enjoy working with your tutor?

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2. What did you enjoy about working with your tutor?

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3. What did you not like about working with your tutor?

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4. What do you think you learned from working with your tutor?

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5. What would have made reading with your tutor better?

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6. Would you choose to work with your tutor again?

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## Tutor Survey

Please rate the following statements.

1. I enjoyed being tutor.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

2. I feel I received adequate training to implement this intervention.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

3. I felt confident in my ability to be a tutor.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

4. I felt I had adequate support as the researcher while I tutored.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

5. I believe that I had a positive influence on my student's reading ability.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

6. I believe that my student's enjoyed the intervention.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

7. I believe this intervention could help more students with reading.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

8. I would choose to participate in this program again if given a chance.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

9. I would recommend other students to participate in this program.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*



**Please answer the following questions**

10. What did you like about this program?

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11. What did you not like about this program?

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12. What suggestions do you have to make this program better?

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13. Any other comments?

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### Teacher/Administrator Survey

Please rate the following statements.

1. I believe that this intervention had a positive effect upon my students.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

2. The students in my class/school seemed to enjoy the program.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

3. I don't feel that the intervention was overly disruptive to my classroom.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

4. I felt the tutors were well trained.

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

5. I felt comfortable with the level of support the tutors received

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

6. I believe this program could help more students if implementation continued

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

7. I would choose to let my students participate again if given a chance

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

8. I would recommend this program to other teachers/schools

*Strongly Disagree*    *Disagree*    *Agree*    *Strongly Agree*

**Please answer the following questions**

9. What did you like about this program?

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10. What did you dislike about this program?

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11. What benefits did you see as a result of the program?

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12. What suggestions would you make to improve this program?

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13. Any other comments?

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## Appendix C

### Phonics for Reading: Fidelity Checklist for Observations

Name of Teacher \_\_\_\_\_

Date of Observation \_\_\_\_\_

Level/Lesson \_\_\_\_\_

#### Classroom Organization

Teacher and student materials are accessible and organized \_\_\_\_\_  
 (Throughout session does it sound like tutor is digging for materials or do they appear to have them on hand)

#### Step 1: New Sounds (Introductory Lessons Only)

		Yes	No
TIME	3 minutes		
MATERIALS	Workbooks		
TEACHER	Teacher pronounces word – students repeat		
	Teacher points out new sound – students repeat		
STUDENT	Repeats the sound a second time		

#### Step 2: Sound Drill

		Yes	No
TIME	3 minutes		
MATERIALS	Phonogram cards		
TEACHER	Teacher shows Phonogram Cards one at a time, allowing students time to respond chorally		
STUDENT	Students chorally give letter name and sound for each Phonogram Card		

#### Step 3: Blending Sounds

		Yes	No
TIME	3 minutes		
MATERIALS	None		
TEACHER	Teacher says each sound clearly and separately		
STUDENT	Students chorally or individually say each word		

#### Step 4: Word Practice

		Yes	No
TIME	5 minutes		
MATERIALS	White Board		
TEACHER	Teacher first demonstrates decoding of the word		
TEACHER	Teacher guides students through decoding of the word		
STUDENTS	Says the word		

#### Step 5: New Words

		Yes	No
TIME	10 minutes		
MATERIALS	Workbook		
TEACHER	On at least first row, teacher points to underlined letter and asks for sound		
TEACHER	Allows students to read word individually or guides through decoding process		

STUDENT	Give word		
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**Step 6: Sight Words**

		Yes	No
TIME	5 minutes		
MATERIALS	Sight Word Cards		
TEACHER	Teacher provides sight word cards and guides students to say, spell, and say each word		
STUDENT	Students chorally read, spell, and read the words and then practice fluent word reading		
BOTH	Read all sight words fluently – read without spelling		

**Step 7: Challenge Words**

		Yes	No
TIME	10 minute		
MATERIALS	Workbook		
TEACHER	Indicates first part of word and guides through sounding out		
STUDENT	Students sound out part one		
TEACHER	Indicates second part of words and guides through sounding out		
BOTH	Repeat part one and two of word		
BOTH	Give full word		

**Step 8: Sentences and Stories**

		Yes	No
TIME	10 minutes		
MATERIALS	Workbooks		
TEACHER	Teacher guides students to read sentence by sentence and then entire passage and mark correct picture		
TEACHER	Provides help in decoding unknown decodable words		
TEACHER	Tells students sight words if they can't remember		
STUDENTS	Take turns reading sentences out loud		
BOTH	Read entire passage together		
STUDENTS	Mark the correct picture		

**Step 9: Spelling**

		Yes	No
TIME	10 minutes		
MATERIALS	Workbook and white board		
TEACHER	Teacher pronounces each word		
STUDENT	Repeats word		
TEACHER	Asks for first sound in word		
STUDENT	Gives first sound		
STUDENT	Writes corresponding letter		
TEACHER	Requests next sound		
STUDENT	Continues spelling word in same manner		
TEACHER	Writes word on the board and helps students check spelling		
TEACHER	Says sentence orally		
STUDENT	Repeats sentence		
BOTH	Work together to write sentence		
TEACHER	Writes sentence on the board and helps students check it		

**Step 10: Practice Activities – Only if time permits**

		Yes	No
TIME	10 minutes		
MATERIALS	Workbooks		
TEACHER	Teacher guides students to read instructions, practices first item with students and provides time for independent work		
STUDENT	Students listen to instructions and carefully complete activity		
TEACHER	Consistently provides feedback while students are working		

**Step 11: Work Checks**

		Yes	No
TIME	5 minutes		
MATERIALS	Workbook		
TEACHER	Teacher calls on students to read answers		
TEACHER	Provides correction when necessary		
STUDENT	Follows along and provides answers		

**Second Day Review**

		Yes	No
TIME	5 minutes		
TEACHER	If lesson is divided into two days phonograms were reviewed at beginning of the lesson		
TEACHER	If lesson is divided into two days sight words were reviewed at beginning of the lesson		

## Phonics for Reading Tutor Self- Check

Name of Teacher: \_\_\_\_\_

Date: \_\_\_\_\_

Level and Lesson Number: \_\_\_\_\_

	<b>Yes</b>	<b>No</b>
Work area was set up and organized before students arrived	_____	_____
Materials are accessible and organized	_____	_____

### Step 1: Phonological Awareness

		Yes	No
TIME	5 minutes		
TEACHER	Teacher engages students in oral sound awareness activity; there should be no writing and activity should move quickly		

### Step 2: New Sounds (Introductory Lessons Only)

		Yes	No
TIME	3 minutes		
TEACHER	Teacher guides students through the reading of words containing the new sounds.		

### Step 3: Sound Drill

		Yes	No
TIME	3 minutes		
TEACHER	Teacher shows Phonogram Cards one at a time, allowing students time to respond chorally		

### Step 4: Blending Sounds

		Yes	No
TIME	3 minutes		
TEACHER	Teacher guides students through the blending of sounds into words		

### Step 5: Word Practice

		Yes	No
TIME	5 minutes		
TEACHER	Demonstrates decoding process and guides students to sound out each word. Provides opportunity to practice words and gain fluency		

### Step 6: New Words

		Yes	No
TIME	10 minutes		
TEACHER	Teacher points out underlined letters and guides students to decode words and provide practice		

### Step 7: Sight Words

		Yes	No
TIME	5 minutes		
TEACHER	Teacher provides sight word cards and guides students to say, spell, and say the word and provides practice quickly reading words.		

**Step 8: Challenge Words**

		Yes	No
TIME	10 minute		
TEACHER	Teacher breaks a word containing the target sound into its parts, then blends the sounds back together to make a word		

**Step 9: Sentences and Stories**

		Yes	No
TIME	10 minutes		
TEACHER	Teacher guides students to read sentence by sentence and then entire passage and mark correct picture		

**Step 10: Spelling**

		Yes	No
TIME	10 minutes		
TEACHER	Teacher guides students through sounding out and spelling words letter by letter, write words in workbook and write correct spelling on board		

**Step 11: Practice Activities**

		Yes	No
TIME	10 minutes		
TEACHER	Teacher guides students to read instructions, practices first item with students and provides time for independent work		

**Step 12: Work Checks**

		Yes	No
TIME	5 minutes		
TEACHER	Teacher calls on students to read answers, provides positive feedback and corrects when necessary		



## Appendix D

## Tutee Interview Results

Did you enjoy working with your tutor?

Yes	100%
No	0%

What did you enjoy about working with your tutor?

She was nice - I learned to read  
 Working with him in our own  
 books  
 the reading  
 reading with her  
 working on the whiteboard  
 Doing the sentences - writing  
 getting stickers  
 The spelling part  
 everything - the reading tests  
 working in our own books  
 reading and spelling with him

What did you not like about working with your tutor?

nothing  
 the fill - in -the blanks activities

What do you think you learned from working with your tutor?

reading  
 how to spell and read better  
 to spell better  
 how to read better  
 learning read better  
 how to spell words  
 to spell better  
 better reader  
 reading better-learning sounds  
 better  
 more about reading and how to do it better  
 writing sentences and understanding stories

What would have made reading with your tutor better?

nothing

sometimes we got too silly and didn't learn

having fun time or games

sometime

more practice with spelling

If sentences were

longer

Would you choose to work with your tutor again?

Yes 100%

Yes, I would do it every day

## Tutor Survey Responses

	Strongly Disagree	Disagree	Agree	Strongly Agree
I enjoyed being a tutor			40%	60%
I feel I received adequate training to implement this intervention			40%	60%
I feel confident in my ability to be a tutor			60%	40%
I felt I had adequate support from the researcher while I tutored			20%	80%
I believe that I had a positive influence on my student's reading ability			20%	80%
I believe that my students enjoyed the intervention			60%	40%
I believe this intervention could help more students with reading			20%	80%
I would choose to participate in this program again if given a chance			60%	40%
I would recommend other students to participate in this program			100%	100%

## What did you like about this program?

\* I liked the fact that I was able to help and connect with the children while at the same time receive experience for the future that will enable me to help others even more

\* I loved having the opportunity to help the students and learn more about reading myself. It was un getting to know the kids and I think it was helpful to them

\* I enjoyed the first-hand experience of teaching the kids and guiding them toward a better educational future

\* I enjoyed working with my students because of their energy, and I was glad to be able to see visible improvement in their ability to read as time

wore on during the program

\* I liked that I had a chance to help a student in the beginning of their learning process and I loved feeling like I was truly helping them

What did you not like about this program?

\* I didn't like that it was for a short period of time so my time with the student was limited

\* I disliked the messy organization and direction of the program initially (when the online class was cancelled), but I think that was just unfortunate happenstance. I think that we tutors could have been given more training and that our reading instruction about sounds proved superfluous since we were merely high school students tutoring part-time

\* The frustration of the students' lack of focus and willingness to learn at times

\* Nothing I can think of

\* In general, I really enjoyed the program. The only thing I would change is to make the tutoring after school hours because it made it hard to always be there due to school functions and other commitments

What suggestions do you have to make this program better?

\* Get the teachers more involved

\* I don't really have an. I thought it was altogether pretty awesome

\* I have no suggestions for this program. I felt it was a well-run program

\* More days of hands on training would be helpful, but given time constraints, the ability to learn as tutors in the first week with students may have to suffice. Still I think two days of practice over a longer time period would have been beneficial. In addition, I hope that the reading instruction is decreased or cut almost entirely in favor of lectures (which overviewed the entire lesson much better) if the program is not expanded like it was originally intended with all the reading lessons

\* To possibly give the students more time with the tutors and have the program run all year

Any other comments?

\* Having tables and students already prepared for tutoring would make the program more convenient, but not necessarily better for tutors who want to experience being a teacher; it would however, allow more students to participate with a stream-lined schedule, as it already takes around 10 minutes to drive from Tullahoma High School to the el. School. For example, I would leave at 1:30 for my 1:45 tutoring and return at 2:30 and essentially miss half of my hour and thirty minute long class - possibly more if I am

delayed by cleanup or testing. Personally, the program was accessible, intuitive, and enjoyable for me, though not all students have a class period with easy or no class time that can be spent tutoring

\* I want to do this again and I definitely think it should be continued for the sake of the students who benefit from it

## Teacher Survey Responses

	Strongly Disagree	Disagree	Agree	Strongly Agree
I believe that this intervention had a positive effect upon my students			67%	33%
The students in my class seemed to enjoy the program			17%	83%
I don't feel that the intervention was overly disruptive to my classroom		17%	83%	
I felt the tutors were well trained			83%	
I felt comfortable with the level of support the tutors received			67%	17%
I believe this program could help more students if implementation continued			33%	50%
I would choose to let my students participate again if given a chance			50%	50%
I would recommend this program to other teachers/schools			50%	33%

What did you like about this program?

- \*Extra help to students who need it
- \*The progress I saw in my student!
- \*Students received small group reading assistance
- \*I liked the personal connection made between the students and tutors I also liked that we were able to give the students an intervention outside of what I was able to provide
- \*The program provided an opportunity for students to receive

intervention that otherwise they wouldn't have received

\*I liked the small group interaction with a student in high school.  
The students really enjoyed being with him (the tutor)

What did you dislike about this program?

\*I would like more students to be served. I wish there was more communication between tutors and teachers. Sometimes hard to work into schedule

\*It is hard to find time in such a busy schedule for this. It caused disruptions when students were pulled from class

\*I liked that it was during the day but it also took some careful scheduling

What benefit did you see as a result of the program?

\*Students gained more confidence in reading

\*Upped ability to sound out words. Upped confidence to try to read

\*My students enjoyed the program and were excited to attend

\*(Student) got extra help that she may not have gotten otherwise

What suggestions would you make to improve the program?

\*That the high school students got some kind of class credit

\*Communication of what is being worked on weekly to teachers.

Also being able to see testing results as students were progress monitored

Any other comments?

\*Thank you so much for providing us with this opportunity It was beneficial to us and the students

## Appendix E

One-Syllable Words						Two-Syllable Words	Irregular or High-Frequency Words
Lesson	Letter(s)	KeyWords	Word Type	Examples	Syllable Type	Examples	
1-4	<i>a</i>	r <u>a</u> n	VC and CVC words with /a/	am man in	<i>a</i> and <i>i</i>	admit cabin	People, school, to, little, on, was, he see, a, the, water, you, are, my, have, her, and, we, with, no, go, she
	<i>i</i>	s <u>i</u> t	VC and CVC words with /i/				
5-7	<i>o</i>	m <u>o</u> p	VC and CVC words with /o/	fox on	<i>o</i> and known vowels <i>a</i> and <i>i</i>	cannot tonsil	after, of, from, some, put
8-10	<i>u</i>	r <u>u</u> g	VC and CVC words with /u/	up sun	<i>u</i> and known vowels <i>a</i> , <i>i</i> , and <i>o</i> <i>e</i> and known vowels <i>a</i> , <i>i</i> , <i>o</i> , and, <i>u</i>	muffin suntan hectic	they, very, saw, went, into, I, look, down, where, children, work, said
11-13	<i>e</i>	r <u>e</u> t	VC and CVC words with /e/	red			
14-16	<i>gg</i> <i>ff</i> <i>ll</i> <i>ss</i> <i>tt</i> <i>zz</i>	egg off hill miss mitt jazz	VCC and CVCC words ending with the double consonants <i>gg</i> , <i>ff</i> , <i>ll</i> , <i>ss</i> , <i>tt</i> , and <i>zz</i>	egg puff will pass putt jazz	double consonants and known vowels	eggnog unless	be, play, tree, snow
17-19	<i>ck</i> <i>th</i> <i>sh</i>	rock path dish	CVCC words ending with the consonant digraphs <i>ck</i> , <i>th</i> , and <i>sh</i>	pack bath fish	<i>ck</i> , <i>th</i> , <i>sh</i> , and known vowels	racket bathtub dishrag	Review of irregular or high-frequency words introduced in previous lessons
20-23	<i>st</i> <i>mp</i> <i>nd</i> <i>nt</i> <i>sk</i>	nest lamp send sent task	CVCC words ending with the consonant blends <i>st</i> , <i>mp</i> , <i>nd</i> , <i>nt</i> , <i>sk</i>	fast lump lend hint mask	consonant blends and known vowels	insist sandbox	Review of irregular or high-frequency words introduced in previous lessons
24-26	<i>ch</i> <i>wh</i> <i>th</i> <i>sh</i>	chin when that shop	CVCC words beginning with the consonant digraphs <i>ch</i> , <i>wh</i> , <i>th</i> , and <i>sh</i>	chop whiz thud shed	<i>ch</i> , <i>wh</i> , <i>th</i> , <i>sh</i> , and known vowels	chipmunk whiplash anthem shipment	Review of irregular or high-frequency words introduced in previous lessons
27-30	<i>cl</i> <i>br</i> <i>cr</i> <i>dr</i> <i>fl</i> <i>fr</i> <i>sl</i> <i>sn</i>	<i>sp</i> <i>tw</i> <i>st</i> <i>pl</i> <i>sk</i> <i>tr</i> <i>gl</i> <i>gr</i>	clam bran crop drip fled Fred sled snap sped twig Glen	clap brim crib drop flat Fred sled snip sped twig step	Consonant blends and known vowels	snapshot clinic	Review of irregular or high-frequency words introduced in previous lessons



## Appendix F

July 25, 2012

Rachel Anderberg, Dr. Amy Elleman, Dr. Jwa Kim □ Department of Psychology □  
ra2q@mtmail.mtsu.edu, Stuart.Bernstein@mtsu.edu, amy.elleman@mtsu.edu,  
jwa.kim@mtsu.edu

Protocol Title: "Training High School Reading Tutors"

Dear Investigator(s),

I have approved your study at the exempt level, pending our office receives the other letters of approval from participating elementary schools.

The exemption is pursuant to 45 CFR 46.101(b) (1). This is because your study consists of educational type survey materials, and information is obtained in such a manner that human subjects cannot be identified.

You will need to submit an end-of-project report to the Office of Compliance upon completion of your research. Complete research means that you have finished collecting data and you are ready to submit your thesis and/or publish your findings. Should you not finish your research within the three (3) year period, you must submit a Progress Report and request a continuation prior to the expiration date. Please allow time for review and requested revisions. Your study expires on July 25, 2015.

Any change to the protocol must be submitted to the IRB before implementing this change.

According to MTSU Policy, a researcher is defined as anyone who works with data or has contact with participants. Anyone meeting this definition needs to be listed on the protocol and needs to provide a certificate of training to the Office of Compliance.

This form can be located at [www.mtsu.edu/irb](http://www.mtsu.edu/irb) on the forms page.

Also, all research materials must be retained by the PI or faculty advisor (if the PI is a student) for at least three (3) years after study completion. Should you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Emily Born". The signature is enclosed in a thin black rectangular border.

Emily Born Compliance Officer 615-494-891

Protocol Number : 12-339

Once your research is completed, please send us a copy of the final report questionnaire to the Office of Compliance.