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## Adult-mediated reading instruction for third through fifth grade children with reading difficulties

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**ADULT MEDIATED READING INSTRUCTION FOR THIRD THROUGH  
FIFTH GRADE CHILDREN WITH READING DIFFICULTIES**

**A Dissertation**

**Submitted to the Graduate Faculty of  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy**

**in  
The Department of Curriculum and Instruction**

**by  
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## TABLE OF CONTENTS

LIST OF TABLES . . . . .	iii
ABSTRACT . . . . .	iv
CHAPTER 1- INTRODUCTION . . . . .	1
CHAPTER 2- REVIEW OF THE LITERATURE . . . . .	12
CHAPTER 3- METHOD . . . . .	54
CHAPTER 4- RESULTS. . . . .	67
CHAPTER 5- DISCUSSION. . . . .	80
REFERENCES . . . . .	87
APPENDIX A: DEMOGRAPHIC TABLES AND STUDENT SURVEYS.	94
APPENDIX B: SAMPLE SCRIPTS, LESSONS, AND IMPLEMENTATION	99
APPENDIX C: CONSENT AND ASSENT LETTERS . . . . .	118
VITA . . . . .	124

## LIST OF TABLES

1- Word Attack and Word Identification Standard Score Means for Torgesen et	20
2- Effect Sizes for Studies Incorporating Adult-Mediated Reading Intervention	37
3- Posttest Means and Standard Deviations for Vadasy et al. (2000) . . . . .	41
4- Posttest Means and Standard Deviations for Reading Measures in Baker et al.	43
5- Tutoring Summary . . . . .	68
6- Pretest Results of Dependent Measures . . . . .	75
7- Pretest and Posttest Achievement Scores (Standard Scores, except for Fluency	76
8- Pretest and Posttest Achievement Scores Regular Education Students . . . . .	77
9- Pretest and Posttest Means and Standard Deviations for Special Education	78
10- Pretest and Posttest Means and Standard Deviations for Special Education	79
11- Effect Sizes (E.S.) for Studies Incorporating Adult-Mediated Reading . . . . .	84

## ABSTRACT

This dissertation examined the efficacy of using minimally trained college undergraduates to tutor third- through fifth-grade students with reading difficulties. Tutors receiving four hours of training in scripted reading program based on the principles of Direct Instruction and emphasizing explicit instruction in phonological awareness and decoding. Thirty-six students from two elementary schools in a large southeastern city in the United States were selected and randomly assigned to treatment (tutoring) or contrast (non-tutoring) conditions. Treatment students received an average of fourteen and a half hours of tutoring over a twelve-week period. Data indicated that university students with minimal training successfully implemented the scripted tutoring package with experimenter feedback. Although, significant differences were only found for word identification, the treatment students out gained the contrast students on all measures. Effect sizes were moderate to strong. In addition, separate data for regular and special education students indicated statistically significant differences on two measures on two measures of fluency (correct words per minute read) for regular education treatment students over regular education control students. The efficacy of using minimally trained adult tutors to supplement classroom reading instruction for students with reading difficulties is also discussed.

## CHAPTER 1

### INTRODUCTION

The breaking of the “code” of written language represents an important educational milestone. Yet, many students experience great difficulties in this complex activity and are at great risk for school failure. Educators and researchers have spent considerable effort to identify and categorize students who fail to break the code of reading. “Developmental reading disability” is one term used to describe otherwise intelligent healthy children who unexpectedly fail to acquire age-appropriate reading, spelling and written language skills (Lovett & Steinbach, 1997). These children are often labeled “learning disabled” or “dyslexic”.

“Learning disability” is a second term that is used to describe children with reading difficulties. A “specific learning disability” is defined by the Individuals with Disabilities Education Act (IDEA) as a disorder in one or more of the basic psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, think, speak, read, write, spell or to do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, and developmental aphasia. The term does not include children who have learning problems which are primarily the result of visual, hearing or motor handicaps, of mental retardation, or environmental, cultural and economic disadvantages (U.S. Office of Education, 1977b, p. 65083).

Difficulty with reading is by far the most common characteristic of students with learning disabilities. It is estimated that at least 80% of children with learning disabilities are referred for special education services for reading problems (Lerner, 1993). Evidence

suggests that reading disabilities are a persistent deficit, not simply a developmental lag in linguistic or basic reading skills (Grossen, 1998). Longitudinal studies have found that 74% of students identified as learning disabled because of reading problems remain disabled in the ninth grade (Fletcher et al., 1994; Stanovich & Siegel, 1994).

The IDEA definition has given states much leeway in defining what it means to be learning disabled. As a result the majority of states use what is known as a severe discrepancy model. The severe discrepancy model normally refers to a 1.5 or greater standard deviation discrepancy between the child's intelligence, providing that intelligence scores are within normal range (i.e.  $\geq 70$ ), and reading score measures (Heward, 2000). Therefore, a student, whose standard score on the word identification subtest of the Woodcock-Johnston test, for example, was 64, while his intelligence standard score was 90, and the standard deviation for the test is 15, would be considered learning disabled under the severe discrepancy model.

A third term, developmental dyslexia is applied to those children who fail to learn to read—to recognize language in its visible form—despite evidence of sensory and intellectual integrity, as well as instructional and socioeconomic opportunity. A failure to acquire rapid, context-free word recognition skill appears to be the most reliable indicator of reading disability (Lovett, 1994; Stanovich, 1991). Both the definitions of learning disability and dyslexia can refer to the presence of a reading disability in spite of otherwise normal intelligence, and in the absence of any other organic brain disability.

It should be noted, however, that reading difficulties are not simply a special education issue. The National Assessment Governing Board in conjunction with the National Center for Education Statistics carried out two related reading studies in an

attempt to determine the prevalence of children reading below age appropriate levels (NAEP, 1993). In the first study 140,000 American children in grades 4, 8, and 12 were tested. The Educational Testing Service (ETS) used careful demographic sampling with accurate proportions of males and females, all ethnic and racial groups, and balanced for geographic location. Their findings showed that 43% of fourth graders were reading “below basic level” or age-appropriate levels. In states such as Louisiana, Mississippi, and the District of Columbia, the figures revealed more than 60% of fourth graders reading below age appropriate levels. When one considers that only about 5% of students nationwide are being served under the IDEA disability category of learning disabilities (U.S. Dept. of Education, 2000) the problem of reading difficulties takes on new meaning.

For adults the problems were just as serious. The results of a second study testing 26,000 adults showed that 22 percent were reading at the lowest level of proficiency, or were considered to be functionally illiterate (NAEP, 1993). The results further showed that U.S. high school students and young adults (ages 16-25) were six times more likely to be functionally illiterate than those of the same age group in Sweden, and twice as likely as those in Canada (NAEP, 1993).

Failure to acquire appropriate word-level reading skills can have potentially devastating effects for both children and adults. Students with learning disabilities are more likely to drop out of high school and less likely to pursue post-secondary opportunities such as college or vocational schools (Blackorby & Wagner, 1996). For those students with learning disabilities who do graduate high school, their employment earnings increasingly lag behind that of their non-disabled peers for all but the first four



years after leaving school (usually because their peers attend college) (Goldstein, Murray & Edgar, 1998).

A series of correlational studies conducted in the late 1960's and early 1970's hypothesized that the core deficit of reading/learning disabilities was phonologically based (Libermann, Cooper, Shankweiler & Studdert-Kennedy 1967; Calfee, Lindamood, & Lindamood, 1973, Rosner & Simon, 1971). Children with phonological awareness difficulties could be accurately predicted to develop future reading problems (Lundberg, Olofsson & Wall, 1980). These children were found to have problems learning correspondences between letters and the sounds they represent in words. Furthermore, these children also have difficulty applying the letter-sound correspondences they do know to generating the pronunciation of unknown words (Torgesen, 1997). The problems that children with reading disabilities have in acquiring the knowledge necessary to convert print into sounds were found to be the most reliable predictor of a reading disability (Stanovich & Seigel, 1994). This problem in acquiring functional alphabetic, or phonological reading skills not only limits early independence in reading, but may also interfere with subsequent development of orthographic (whole word) reading strategies that are the basis of fluent reading (Torgesen, 1997).

To address the needs of students with reading difficulties, researchers have stepped up the intensity of development for interventions and techniques to aid both at-risk readers, those who are in danger of developing a reading disability as well as remedial readers, or those who currently experience a deficit in basic reading skills. As a result, remediation programs with explicit training in phonological awareness and the alphabetic principle (decoding) have been developed to address the needs of these

students. One such reading program that came to the forefront in the early 1970's is DISTAR, based on the principles of Direct Instruction (Abt Associates, 1975). In a large-scale study, known as Project Follow Through, DISTAR was found to be the most effective reading instruction program tested for at-risk children in the early elementary grades. As a result the Corrective Reading program was developed by Siegfried Engelmann from the DISTAR program to address the needs of remedial readers. In a meta-analysis conducted by Adams and Englemann (1996) on twenty-five years of direct instruction research, direct instruction-reading interventions consistently outperformed alternate or no-treatment conditions yielding a medium effect size of .69, but three times that of other programs tested. While the majority of studies using corrective reading have been successful, a few studies have met with only limited success (Polloway, Epstien, Polloway, Patton & Ball, 1986; Kuder, 1990; Kuder, 1991).

In addition to Direct Instruction, another remediation program emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) is the Auditory Discrimination in Depth program (ADD) (Lindamood & Lindamood, 1975). The ADD program focuses on teaching children and adults to first identify sounds by physically feeling the origins of all English phonemes. The learner then uses a series of colored blocks to identify and manipulate these phonemes in words. The program teaches blending, segmenting, and phoneme manipulation through the use of these colored blocks. Studies using the ADD program have demonstrated statistically significant gains on several word-level reading skills for students from ages six to sixteen as well as adult populations (Wise, Olson & Ring, 1999; Torgesen et al., 2001; Alexander, Anderson, Heilman, Voeller & Torgesen, 1991; Truch, 1994). Two studies

(Wise, Olson & Ring, 1999; Torgesen et al. 2001) lend strong support for the use of the ADD program for students with reading disabilities while two other studies (Alexander et al. 1991; Truch, 1994), though possessing methodological weaknesses, lend good support for the use of the ADD program.

The findings of Wise, Ring and Olson (1999) and Torgesen et al. (2001) support the use of interventions emphasizing explicit instruction in phonological awareness and decoding by demonstrating the effectiveness of the ADD program. Wise, Olson & Ring (1999) demonstrated that the ADD program could be effective without explicit attention to articulation. Three treatment conditions with different variations of phonological awareness training consistently outperformed a contrast group of similar students. Furthermore, no significant differences were found among the three treatment conditions. The findings of Torgesen et al. (2001) also support the use of intervention programs emphasizing explicit instruction in phonological awareness and decoding by demonstrating that two different programs, including ADD were equally as effective in addressing the reading remediation needs of 60 children with severe reading disabilities.

Although neither of the following two studies incorporated a control group, they also support the use of the ADD with remedial readers (Alexander et al 1991; Truch, 1994). Alexander et al. (1991) demonstrated that ten students, ages seven through twelve, with severe dyslexia made statistically significant pretest-posttest gains in both phonological awareness and analytic decoding skills, when administered the ADD program. Truch (1994) also found that statistically significant pretest-posttest gains in word-level reading skills for 281 clients (ranging from school-age to adulthood) seen over a two-year period at the Reading Foundation in Alberta, Canada using the ADD

program. Results from the study indicated that the remediation was effective for all subjects, though gains in spelling tended to be less than on reading scores.

Another remediation program emphasizing explicit instruction in phonological awareness plus decoding is the Phonological Awareness and Blending/Direct Instruction or PHAB/DI, which trains students in phonological awareness and blending and provides direct instruction in letter-sound correspondences. The program differs from the ADD program in that it does not focus on attention to articulation and mouth positions. Two studies (Lovett et al. 1994; Lovett & Steinbach, 1997) lend strong support for use of the PHAB/DI program for students with reading disabilities.

The findings of Lovett et al. (1994) and Lovett and Steinbach (1997) support the use of programs emphasizing explicit instruction in phonological awareness and decoding by showing that the PHAB/DI program was effective in meeting the needs of remedial readers of different ages. They also found no evidence of a developmental window in which phonological awareness could be remediated. The first study examined the effect of PHAB/DI on the word-level reading skills of 62 children, ages (7-13). Results indicated large positive effects on word-level reading skills, transfer on several measures, and generalized achievement gains (Lovett et al., 1994). Lovett and Steinbach (1997) then examined the effectiveness of both the PHAB/DI and WIST programs for 122 reading disabled children in grades two through six. Their major research question for this particular study was “does the benefit of phonological awareness training decrease for older children?” Results indicated explicit instruction in phonological awareness and the alphabetic principle was effective, regardless of students grade-level or prior level of deficiency.

Yet another remediation program emphasizing explicit instruction in phonological awareness and decoding is Phono-Graphix. This program emphasizes phoneme awareness training, sound to print orientation, curriculum design sequenced by orthographic complexity, and active parental supervision in homework assignments. Phono-Graphix differs from other phonologically based reading programs by teaching the entire spelling code. Although no comparison group was included, one study using Phono-Graphix (McGuinness, McGuinness & McGuinness, 1996) lends support for the use of intervention programs emphasizing explicit instruction in phonological awareness and decoding by showing that the Phono-Graphix program was effective in producing substantial statistically significant pretest-posttest gains across several reading and spelling measures for 87 children with reading disabilities ages six through sixteen.

Finally, another remediation program in the literature emphasizing an explicit phonological awareness with decoding component is Spell-Read Phonological Auditory Training (P.A.T.). This phonological auditory training program focuses on phonemic awareness, phonics skill development and meaningful reading and writing. This focus on meaningful reading and writing distinguishes it from other programs that mainly focus on word-attack and book-reading activities. Rashotte, MacPhee, and Torgesen (2001) showed that the Spell-Read P.A.T. program was effective by finding significant increases in phonemic awareness, word identification and word attack skills for 115 second-through sixth-grade students over a similar group of contrast students. Improved reading skills as a result of the program were evident regardless of the level of deficiency prior to instruction, and were not limited to specific grades.

Programs emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding), such as Corrective Reading (Englemann & Adams, 1996) Auditory Discrimination in Depth (ADD)(Alexander et al., 1991; Truch, 1994; Wise, Olson & Ring, 1999; Torgesen et al, 2001), Embedded Phonics (Torgesen et al., 2001), PhonoGraphix (McGuinness, McGuinness & McGuinness, 1996), Spell-Read P.A.T.(Rashotte, MacPhee & Torgesen, 2001), and PHAB/DI (Lovett et al 1994; Lovett & Stienbach, 1997) have been shown to increase phonemic awareness and subsequent word attack and word identification skills for students from second-grade to adulthood.

Certainly issues related to the design of effective reading interventions and programs remain critical areas for additional research. Equally pressing are issues related to the management of reading instruction in diverse settings. It is logical that programs that cannot be implemented within the general context of the classroom will have limited utility in addressing the need for more effective reading instruction. One method for providing more intensive reading instruction within the general context of the classroom is the use of tutors.

In the current study we decided to test the efficacy of using volunteer tutors to help meet the needs of students who are currently experiencing reading difficulties. We chose this method because of the growing emphasis on volunteerism especially in the United States, specifically the federal program America Reads in which includes college students serving as tutors for elementary students in the primary grades. Although the effectiveness of one-on-one tutoring is widely accepted, most research in this area involves the use of certified teachers or paraprofessionals as tutors rather than volunteers (Wasik & Slavin, 1993). Not surprisingly they found that tutoring programs

implemented by professional teachers appear to result in substantially larger reading gains for students than those implemented by paraprofessionals (Wasik & Slavin, 1993). Additionally, studies using paraprofessionals and demonstrating effective gains, were typically very structured and used highly trained paraprofessionals. Wasik (1998) reviewed 17 programs that used adult volunteers and found that only 3 of the programs had evaluations that included a comparison group; 5 of the programs had no evaluations at all.

More recently, Baker, Gersten, & Keating (2000) examined the effectiveness of minimally trained volunteers from the business community and found positive results on several measures of early reading ability. Other researchers have provided more training and supervision with positive results (Fitzgerald, 2001; Vadasy, Jenkins & Pool, 2000). Tutors in the Fitzgerald (2001) study were college students trained through the America reads program; tutors in Vadasy, Jenkins & Poole (2000) were adults from the community who were paid a nominal hourly wage for tutoring. Although the tutors in Baker et al. (2000) did not receive extensive training and supervision, they were taught to use specific straightforward strategies including questioning, shared reading and repeated reading. While the studies presented above have demonstrated improved results for students in the lower elementary grades on several measures of reading ability; to our knowledge, little research exists on the effectiveness of adult mediated instruction on the reading skills of students in the upper elementary grades.

The research presented above allows for two conclusions or suppositions. First, there appears to be ample evidence to support the importance of interventions emphasizing explicit instruction in phonological awareness and the alphabetic principle

in addressing the remediation of students with reading problems (Alexander et. al, 1991; Truch, 1994; Wise, Olson & Ring, 1999; Torgesen et al., 2001). Ultimately the empirical success of programs designed to focus on the development of sound awareness and decoding supports this conclusion. Second, while several adult-mediated intervention programs have demonstrated marked success in reading remediation for early elementary at-risk readers, there continues to be a need to test the efficacy of adult-mediated interventions with older students in order to more fully understand the effect such a program might have on those readers who are currently experiencing reading failure.

The proposed study has two purposes: (1) To test the efficacy of adult-mediated reading instruction for third- through fifth-grade students with reading difficulties, and (2) to determine the effectiveness of a remediation program emphasizing explicit instruction in phonological awareness and decoding when delivered by minimally-trained adult volunteers. This study was guided by the following research questions:

1. What is the effect of a systematic tutoring intervention based upon the principles of direct instruction, emphasizing explicit instruction in phonological awareness plus decoding, on the word attack, word identification, passage comprehension, and oral reading fluency of third-, fourth- and fifth-grade students with reading difficulties?
2. What is the feasibility of using minimally-trained college students as tutors for third-, fourth- and fifth-grade students with reading difficulties?



## CHAPTER 2

### REVIEW OF THE LITERATURE

A variety of terms are used in the literature to describe students with reading difficulties. One such term is “developmental reading disability,” which is defined as otherwise intelligent healthy children who unexpectedly fail to acquire age-appropriate reading spelling and written language skills (Lovett & Steinbach, 1997). A second term, learning disabilities as defined by IDEA, likewise describes children who exhibit unexpected differences between reading achievement and adequate overall intelligence (U.S. Office of Education, 1977). A third term that appears in the literature to describe reading disabilities is “developmental dyslexia” which refers to children who unexpectedly fail to learn to read—to recognize language in its visible form—despite evidence of sensory and intellectual integrity, as well as instructional and socioeconomic opportunity (Lovett, 1994; Stanovich, 1991). Regardless of the label, schools have long been confronted with a significant number of children that fail to adequately develop the ability in interact successfully with text (U.S. Dept. of Education, 2000; NAEP, 1993). This challenge has led to multiple efforts to address the remediation of reading difficulties and to devise structures through which many of these students may receive more effective reading instruction.

This chapter presents a comprehensive review of the literature in two areas: remedial reading instruction and adult mediated instruction. A description of the pertinent research including the search criteria will be presented based upon the following conclusions: (1) Interventions emphasizing explicit instruction in phonological awareness and decoding have been demonstrated to produce significant reading gains for children

with reading disabilities, and (2) While several adult-mediated tutoring interventions have demonstrated success for children at-risk for reading failure on several measures of reading ability, there continues to be a need to test the efficacy of adult-mediated instruction with older populations. Strengths and limitations will follow each study and research questions to guide the current study will conclude the chapter.

### Interventions Emphasizing Explicit Instruction in Phonological Awareness and Decoding

Intervention studies emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) will now be presented. Studies demonstrating significant reading gains for students with reading disabilities were included based on the following criteria: (1) The use of an explicit phonologically based remediation program with decoding on students identified with some type of reading disability; (2) administered in a 1 to 1 or small group setting; (3) the use of standard scores as the primary measures for changes in reading scores, especially word identification and word attack skills; (4) and conducted on English speaking populations from 1991 to 2001. Advantages and limitations will follow each study. The four programs found in the literature are (1) Auditory Discrimination in Depth (ADD), (2) Phonological Awareness and Blending/Direct Instruction (PHAB/DI), (3) Spell-Read P.A.T., and (4) Phono-Graphix. I will briefly discuss the purpose of each program followed by a detailed discussion of the studies supporting its use for students with reading disabilities.

#### Studies Supporting Auditory Discrimination in Depth (ADD).

Lindamood and Lindamood (1975) developed the ADD program for the purpose of teaching reading to children and adults by first having them identify individual phonemes within words by becoming aware of the physical origin of the sounds. The

program incorporates explicit instruction in phonological awareness and the alphabetic principle. Two studies found incorporating Auditory Discrimination in Depth (Wise, Olson, and Ring, 1999; Torgesen et al., 2001) strongly support its utility in producing significant reading gains for children with reading disabilities ages six to thirteen. Two other studies, although containing methodological weaknesses, (Alexander, Anderson, Heilman, Voeller, & Torgesen 1991; Truch, 1994) also lend support to the ADD program by having demonstrated statistically significant gains in reading measures for students and adults with reading difficulties ages six to sixty-five.

Wise Olson and Ring (1999). The findings of this study strongly support the use of a program emphasizing explicit instruction in phonological awareness and decoding by showing that three treatment groups totaling 122 second through fifth-grade students with reading disabilities, given specific variations of the ADD program, demonstrated statistically significant gains over a similar group of contrast students (n=31). To meet the definition of reading disabled, children had to display significant problems with word recognition (lower 10% in their classroom) despite intelligence in the normal range (either verbal or performance IQ at 85 or above) with no apparent sensory deficits or emotional problems, and English as their primary language. The study found statistically significant gains for 122 (7 to 11 year-old) children with reading disabilities in phonemic awareness and word identification. Furthermore, the study found no significant differences between the three treatment conditions suggesting that specific variations of good phonological training may not be as important as once thought.

Students were pseudorandomly assigned to three treatment conditions and a control condition with training conditions balanced across five training schools. All

groups spent varied amounts of time on academic activities including phoneme awareness (articulation and phonological), manipulation, phonics instruction, computer practice and story reading receiving a total of 40 hours of instruction. The first was an articulation-only group (n=43) who spent no time manipulating sounds. The second was a sound manipulation group (n=42) that did not focus on articulation but did spend time manipulating sounds. The third group was a combination group (n=37) that spent time in both articulation and manipulation exercises. A planned difference in the design was that children in the articulation-only group spent the most time reading accurately in context on computers. Children in the combination condition spent the least time reading in context, with more time spent practicing the articulatory concepts and doing manipulation exercises. A control group of 31 students who received regular classroom instruction from three other schools was also included. Pretests included word recognition using the WRAT, Level 1, (Jastak & Wilkinson, 1984) and phoneme awareness using the extended second half of the Lindamood Auditory Conceptualization Test (LAC) (Lindamood & Lindamood, 1979) which included 18 items. Orthographic coding as measured by a computer-administered orthographic choice test which was developed by the researchers, spelling as measured by WRAT Level 1 (Jastak & Wilkinson, 1984) spelling test, reading comprehension as measured by the Peabody Individual Achievement Test (Dunn & Markwardt, 1970) and arithmetic as measured by the WRAT Level 1 were also measured, but since no measure of word attack was taken, this review will focus only on the measures of word identification and phoneme awareness. Students received 40 hours of training in their respective treatment conditions, and were then administered a posttest and a one-year follow-up.

Results from the LAC showed a raw score gain of 4.3 from a pretest level of 4.7 to 9.0 for the treatment conditions, with only a minimal gain reported for the control conditions. With regard to the treatment conditions the articulation-only group showed the smallest gains, 2.5 points, with each of the other groups showing approximately a five-point gain on the LAC. On the Word Identification subtest the treatment groups significantly out performed the control group showing a 9.9 standard score gain as compared to 3.4 for the control group. Statistically significant gains as determined by a multivariate analysis of covariance (MANCOVA) were found for phoneme awareness  $F(11,89) = 2.12, p = .026$  and word recognition  $F(3, 148) = 6.6, p < .001$ .

Strengths of this study include the use of three treatment groups, which allows a deeper level of comparison of the independent variable, the use of a control group and the use of standard scores for word identification. A limitation of the study was the use of an unbalanced control group in which subjects were not matched, which makes comparisons to treatment groups more tedious.

Torgesen et al. (2001). Although the researchers did not include a no treatment control group, this study lends further support for the use of programs emphasizing explicit instruction in phonological awareness and decoding by showing that both the ADD program and Embedded Phonics, another phonological awareness plus decoding program, were effective in producing statistically significant pretest to posttest gains on several reading measures for sixty students with learning disabilities between the ages of 8 and 10. The purpose of the study was to determine the amount of time needed to fully remediate students with severe reading disabilities. All children in the sample had verbal intelligence as estimated by the Wechsler Intelligence Scale for Children-Revised

(WISC-R; Wechsler, 1974) of 75 or above, and obtained an average standard score of two measures of word-level reading from the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1987) of at least 1.5 standard deviations below the average for their age, as well as below age level scores on the LAC. Children were randomly assigned and received treatment in either the ADD or Embedded Phonics program. Both groups achieved similar scores on all measures at pretest.

Embedded Phonics differs from the ADD program in that it provides extensive opportunities to read and write meaningful text. Children are initially given an informal assessment of their knowledge of letter sound correspondences, blending skills and sight-word vocabulary. The content of instruction is then tailored to each individual child's need. However, the amount of time spent in each kind of instructional activity was roughly the same for each child in the EP condition. Activities in the EP condition include sight word reading, word games, a phonics mini-lesson, oral reading, spelling, basal reading, and writing activities. The ADD and EP conditions were not intended for comparison to each other; however, the primary purpose of the study was to see if two treatment programs, with different instructional foci, could produce similar effects upon reading skills of children with severe reading disabilities.

Phonological awareness was measured by both the LAC and the Phoneme Elision subtest of the Comprehensive Test of Phonological Processes (CTOPP; Wagner, Torgesen, & Rashotte, 1999) which measures a subject's ability to hear sounds in words by asking the subject to say a word after deleting either a syllable or phoneme of another word. Other phonological awareness measures taken were coding in working memory as measured by the Non-Word Repetition and Memory for Digits subtests of the CTOPP

and two measures for rate of access to phonological information into long-term memory as measured by the Rapid Digit Naming and Rapid Letter Naming subtests of the CTOPP. These results will, however, not be reported in this review. Word attack and word identification were measured by Woodcock Reading Mastery Test-Revised (Woodcock, 1987) and reported in standard scores. Other reading measures taken but not reported in this review were passage comprehension as measured by the Passage Comprehension subtest of the WRMT-R, phonemic decoding efficiency and sight word efficiency from the Test of Word Reading Efficiency (TOWRE; Torgesen, Wagner, & Rashotte, 1999), reading accuracy, reading rate, and reading comprehension measures from the Gray Oral Reading Test-III (GORT-III; Wiederholt & Bryant, 1992). Children in both conditions were provided with 67.5 hours of instruction and then given a posttest upon completion of their respective programs. One and two year follow up tests were also administered.

Statistically significant gains as determined by an Analysis of Variance (ANOVA) were reported for all reading measures, with  $F_s$  (1, 47) ranging from a high of 309.2 for word attack to a low of 7.6 for rate during the treatment period. At the completion of the study 40% of the children were found to be no longer in need of special education services. Results from the LAC indicated a standard score gain of 32.9 points from a pretest average of 56.3 to 89.2 for the ADD group and a gain of 19.6 for the EP group from a pretest average of 49.4 to 69.0. A slight decrease in LAC scores was reported for both one and two-year follow-up tests, 82.3 and 82.2 respectively for the ADD group while a slight increase to 72.0 and 76.2 at the one and two-year follow-up tests, respectively for the EP group. A standard score gain of 11.2 points from a pretest

average of the Phoneme Elision Test of 88.8 to 101.0 was also reported. A slight decrease to 97.9 was shown at both the one and two year follow up tests. The EP group showed a gain of 13.7 points on Phoneme Elision from pretest level of 84.2 to 97.9 with one and two-year follow-up scores of 94.4 and 98.8 respectively.

Word attack and word identification standard score means are presented in Table 1. Word attack posttest scores increased 27.9 standard points for the ADD group with one and two year follow-up scores dropping slightly. The EP group experienced an average gain in standard scores in word attack of 20.2 standard points with a slight drop at the one and two year follow-ups. Word identification scores for the ADD group increased 12.5 standard points with one and two year follow-up scores remaining stable. Word identification scores for the EP group increased 14.1 standard points with one and two year follow-up scores remaining stable. In summary, both the ADD and EP groups made large significant pretest-posttest gains on word attack, word identification, and phonological awareness measures indicating that both programs, incorporating explicit instruction in phonological awareness and decoding, were effective in meeting the needs of students with reading disabilities.

Strengths of this study include an adequate sample size and consistent definition of reading disabilities as well as the use of a second treatment group, which although was not a primary objective of the study, did serve as a comparison group. Random assignment to treatment groups was also a strength of this study and increases internal validity. A limitation of the study was that lack of a no treatment control group in order to compare the two treatment groups to the progress of students receiving classroom reading instruction.



Table 1

Word Attack and Word Identification Standard Score Means for Torgesen et al. (2001)

	<u>*Word Attack</u>	<u>(SD)</u>	<u>*Word ID.</u>	<u>(SD)</u>
<i>ADD Group</i>				
Pre	68.5	(11.8)	68.9	(8.3)
Post	96.4	(7.0)	82.4	(11.2)
1-year	90.7	(9.3)	82.7	(9.6)
2-year	91.8	(12.5)	87.0	(12.1)
<i>EP Group</i>				
Pre	70.1	(9.2)	66.4	(8.7)
Post	90.3	(8.3)	80.5	(9.6)
1-year	87.0	(8.9)	78.2	(11.3)
2-year	89.9	(10.4)	83.9	(12.2)

\* changes significant at  $p \leq .05$

Alexander, Anderson, Heilman, Voeller, & Torgesen (1991). Although this study did not include a contrast group and had a relatively small sample (N=10), it lent some support to the use of a program incorporating explicit instruction in phonological awareness and decoding by showing that ten students with reading difficulties who completed the ADD program demonstrated statistically significant pretest to posttest gains across several reading measures. All children attained a full-scale intelligence score above 85, ranged in age from 7.75 years, to 12.86 years (M=10.75), and were divided equally by sex. Their phonological awareness skills were assessed by the

Lindamood Auditory Conceptualization Test (LAC) (Lindamood & Lindamood, 1979), which tests the awareness of individual phonemes. Pre-test scores on the LAC for the subjects were substantially below the level for children of their age and IQ. Nine of the ten subjects displayed a discrepancy of at least 1.5 standard deviations between their full scale IQ and their scores on the Word Identification subtest of the Woodcock Reading Mastery Test (Woodcock, 1973).

Pretest measures included the LAC, and the Word Identification and Word Attack subtests of the Woodcock Reading Mastery Test (Woodcock, 1973). The word analysis test requires children to read a series of increasingly difficult phonologically regular nonwords, and provides a sensitive measure of alphabetic reading skills (Frith, 1985). Following the administration of the pretests, all children were provided training in the Auditory Discrimination in Depth (ADD) program (Lindamood & Lindamood, 1975). Training was concluded when the child had finished all levels of the program. Number of hours training varied between 38 and 124 ( $M=64$ ). At the conclusion of the program children were administered posttests consisting of the same three measures as the pretest.

Significant pre-posttest gains were reported on both word identification and word attack measures  $t(9) = 7.5$  and  $t(9) = 5.4$ ,  $p < .001$ . Results indicated that nine of ten children achieved a perfect score of 100 on the LAC with the other receiving a score of 99. The pretest mean for the LAC was 57.9 and the posttest mean was 99.9. On the Word Identification subtest, which was reported in standard scores, subjects showed a group average gain of 12.5, an increase from 75.1 at pretest to 87.6 at posttest. Results from the Word Attack subtest showed an even greater gain of 20.7, from 77.7 to 98.4.

One strength of this study is that it used standard scores, based upon chronological age norms, as opposed to grade level scores. Another strength of the study is that children were trained to a mastery criterion level, finishing all levels of the program. Limitations of the study include the lack of a control group and a relatively small sample size, which may affect internal validity. It is also not known whether the selection of the ten subjects was done on a random basis from the larger clinical population, which may further weaken the results of the study.

Truch (1994). Although this study did not include a contrast group, it also lent support to the use of programs emphasizing explicit instruction in phonological awareness and decoding by showing that the ADD program was effective in producing statistically significant effects on several reading measures for 281 clients ranging from school age to adult, who were seen over a two-year period at The Reading Foundation Clinic in Calgary, Alberta. Of the 281 clients 60% were in the 6-12 age group (n=156), 25% were ages 13-17 (n=49) and the remaining 15% were ages 18 and over (n=24). No attempt was made to classify subjects into various disability categories. However, the researcher reported the majority of the subjects met the traditional criteria for 'learning disabled' (i.e., average intelligence or better, but with a discrepancy between reading potential and performance) or "dyslexic" and others could be classified as "slow learners" or "mentally challenged." All subjects demonstrated an initial deficit in phonological awareness (as measured by the LAC test) and all of them complained of some difficulty in reading (decoding), spelling or written language. Subjects ranged in age from 5 to 55 (M=12.85). The ratio of male to female subjects was 2.27 to 1 (N=196 male, N=85 female).

Subjects were administered a pretest upon entering the clinic using the Lindamood Auditory Conceptualization Test (LAC) (Lindamood & Lindamood, 1979), the Word Attack Subtests from the Woodcock Reading Mastery Tests (Woodcock, 1973), the Reading subtest from the Wide Range Achievement Tests-Revised (Jastak and Wilkinson, 1984) was used to measure word identification. While the WRAT reports standard scores, the Woodcock Word Attack yields grade-equivalent scores. Posttest data were then collected on each subject after 80 hours of intensive ADD instruction.

Statistically significant gains as determined by an Analysis of covariance (ANCOVA) were evident on measures of phonological awareness  $F(1, 1279) = 837.59, p < .0001$ , word attack  $F(1, 1255) = 1134.77, p < .0001$ , and word identification  $F(1, 1278) = 666.23, p < .001$ . Results from the LAC showed average posttest gains to be 28 points from a pretest level of 64 to 92. Gains on the WRAT-R Reading test, which measured word identification, showed mean posttest gains of 17 standard points from a pretest level of 76 to 93. Grade equivalent scores on the Woodcock Word Attack showed a 4.35 gain from a pretest grade level of 2.96 to 7.31.

A strength of this study was that it used a larger sample size compared to Alexander et al. (1991), strengthening the internal validity of the study. The study also included a wider range in the ages of the subjects, which makes generalization to older populations more plausible. Limitations of the study include the absence of a control group, which makes it difficult to determine whether the effects were primarily due to the ADD program, and the use of grade equivalent scores for word attack, which do not take age into consideration. The use of grade-equivalent scores also makes comparisons to related studies that use standard scores impossible.

In summary, the studies reviewed incorporating the ADD program have been shown to be effective in improving the phonological awareness, word identification, and word attack skills of both students and adults, ages six to sixty-five with reading difficulties. Additionally, these studies presented appear to support to the use of programs emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) by demonstrating statistically significant gains across several reading measures for students with reading disabilities.

#### Studies Supporting the Use of Phonological Analysis and Blending/Direct Instruction

In addition to Auditory Discrimination in Depth (ADD), a second intervention program emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) that appears in the remediation literature is the Phonological Analysis and Blending/Direct Instruction (PHAB/DI). Developed by Lovett et al. (1994), PHAB/DI trains children in phonological awareness and blending, with much of the phonological training done in the context of printed presentations and direct instruction of letter-sound and letter cluster-sound correspondences. The program uses sections of direct instructional materials developed by Englemann and his colleagues at the University of Oregon, specifically the Reading Mastery Fast Cycle I/II Program (Englemann & Bruner, 1988) and the Corrective Reading Program (Englemann et al. 1978; Englemann et al., 1988) and adopted their orthography and way of teaching letter-sound correspondences. The PHAB/DI program differs from the ADD program in that its major foci are on word segmentation and sound blending skills as opposed to the physical origin of the phonemes. Two studies found incorporating PHAB/DI (Lovett et al. 1994; Lovett & Steinbach, 1997) strongly support the use programs emphasizing

explicit instruction in phonological awareness and decoding by demonstrating gains on several reading measures for students with reading difficulties ages seven to thirteen.

Lovett et al. (1994). The researchers in this study found that the PHAB/DI program was effective in producing statistically significant gains for treatment students, ages seven to thirteen, with reading difficulties over a similar group of contrast students. Treatment groups received 35 hours of training in either the PHAB/DI or Word Identification Strategy Training (WIST), which uses a strategy-based meta-cognitive decoding training approach, however a breakdown of the number of students in each group was not available. Both programs tapped an identical corpus of words during instruction with all words having regular spelling-to-sound correspondences. The sample was confirmed to be of average intelligence on both verbal and nonverbal estimates (WISC-R IQ mean of 91.5). To be selected for the sample the child had to score below the 25<sup>th</sup> percentile in word attack and word identification skills, with this result replicable on 4 of 5 different measures. The replication requirement was adopted to ensure that achievement deficits were not artifacts of word frequency and phonetic predictability distributions for different standardized word tests.

Phonological awareness was measured by the Goldman-Fristoe-Woodcock (GFW) Sound Analysis, Sound Blending, and Sound –Symbol Association subtests (Goldman et al., 1974). Word Identification was measured by the Wide Range Achievement Test-Revised (WRAT-R) Reading subtest and Woodcock Reading Mastery Tests-Revised (WRMT-R) Word Identification subtest. Standardized measures, however, were not used to measure word attack strategies in this study. Other measures examined but not included in this review were spelling as measured by the WRAT-R,

PIAT-R and the GFW, passage comprehension as measured by the WRMT-R and arithmetic as measured by the WRAT.

A significant program effect as determined by a Multivariate Analysis of Variance (MANOVA) was revealed for both word identification  $F(2, 58) = 3.96, p < .02$  and word attack  $F(2, 49) = 6.17, p < .004$ . Results from WRAT-R Reading subtests showed an increase of 8.9 standard points from a pretest level of 66.7 to 75.6 for the PHAB/DI group and an increase of 4.7 standard points from a pretest level of 61.9 to 66.6 for the WIST group, with the control group showing only a modest gain of .6 standard points from a pretest level of 68.7 to 69.3. Results from the WRMT-R showed a standard point gain of 3.7 from a pretest level of 66.7 to 71.4 for the PHAB/DI group and a 3.9 standard point gain from 60.5 to 64.4 for the WIST group, with the control group showing a 3.1 standard score gain from 69.8 to 72.9.

Phonological awareness skills showed an average raw score gain of 8.5 from a pretest level of 38.9 to 47.4 on the GFW Sound Analysis subtest for the PHAB/DI group, a 4.9 point gain from 37.3 to 42.3 for the WIST group and a .5 point gain for the control group from 41.1 to 41.6. Scores on the Sound Blending subtest increased 7.0 points from 40.1 to 47.1 for the PHAB/DI group, an increase of 3.9 points from 42.3 to 45.2 for the WIST group, and a 1.5 point increase for the control group from 40.7 to 42.2. Scores on the Sound-Symbol subtest showed an increase of 2.2 for the PHAB/DI group from 47.8 to 50.0, a 4.4 point increase from 48.5 to 52.9 for the WIST group and 7.5 point increase from 48.8 to 56.3 for the control group. Due to the use of non-standardized tests for measurement of word attack skills, these results will not be reported.

Strengths of this study include the use of a control group and random assignment of subjects to groups, which helps to strengthen the internal validity of the study by assuring that each subject had an equal chance of being assigned to a particular group (Campbell & Stanley, 1963). The study also employs the GFW, which measures sub-skills of phonological awareness. Limitations of the study include the lack of a standardized test to measure word attack and poorly defining the scoring for the GFW subtests, which could make comparison to other phonological awareness measures problematic, and the lack of information on the number of students assigned to treatment and contrast conditions. Nevertheless, the findings support the use of programs emphasizing explicit instruction in phonological awareness and decoding by demonstrating statistically significant treatment-group gains over a similar group of contrast students.

Lovett & Steinbach (1997). The researchers in this study showed that the PHAB/DI program was effective in producing statistically significant gains across several reading measures for 48 reading disabled children, ages from 7-12 over a similar group of 36 contrast students. Furthermore gains were consistent, regardless of students' age, grade, or prior level of skill deficiency. One of the major research questions was "does the benefit of phonological training decrease for older children?" The sample represented a severely impaired group performing between the third and fourth percentiles on multiple standardized reading and spelling tests. Many of the same measures as Lovett et al (1994) were used with the one notable exception being the Woodcock Reading Mastery Test-Revised (WRMT-R) to measure word attack and more clearly defined scoring criteria for the GFW subtests. As in Lovett et al. (1994) subjects were assigned



to either one of two treatment groups, PHAB/DI (n=48) or WIST (n=38) or a contrast condition (n=36) and the treatment groups received 35 hours of training in their respective programs.

A significant main effect for program as determined by a MANOVA was revealed for posttest performance for word identification  $F= 26.62$ ,  $p < .001$ , word attack  $F= 6.08$ ,  $p < .001$  and phonological measures  $F= 3.16$ ,  $p < .01$ . Results indicated similar increases from an average of 16.8/28 to 20.8 for children in grades 2 and 3 (group 1), 19.2 to 24.2, for grade 4 (group 2), and 18.1 to 24.6 for grade 5 (group 3), in the PHAB/DI treatment on the GFW Sound Analysis subtest, with only modest gains reported for the control and WIST groups. Similar differences were also found for the GFW Sound-Blending subtest. Scores from the word identification subtests of the WRMT-R showed a standard score gain of 2.4, 4.6 and 4.0 for groups 1, 2 and 3 respectively for the PHAB/DI treatment. Standard score gains of 3.0, 3.5 and 5.1 for groups 1, 2 and 3, respectively, were reported for the WIST treatment, while gains of 3.5, 0.3, and 7.6 for groups 1, 2 and 3 were reported for the control condition. With respect to word attack, which was measured by WRMT-R, standard scored gains for the PHAB/DI condition were 9.4, 8.9 and 14.8 for groups 1, 2 and 3 respectively, while the WIST group had gains of 8.4, 14.8 & 7.4 and the control groups showed gains of 3.4, 3.0 and 5.2. It is important to note that in both this study and Lovett et al. (1994) standard score gains in word identification were not significantly above those experienced by the control group. One of the interesting results of this study was that there was no evidence of a developmental window beyond which phonological deficits cannot be remediated with

intensive phonological training. In other words, the intervention appears to be equally effective regardless of the point in the child's life when it is instituted.

This study is notable for the use of a control group, better definitions of the outcome measures, the use of standard scores for reporting word attack which was not used in Lovett et al. (1994) and that the examination a more diverse age range. One limitation of the study is the lack of random assignment to groups, which was a strength of the previous study. In summary, the two studies presented using the PHAB/DI program lend support to the use of programs emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) by demonstrating statistically significant gains across several reading measures for students with reading disabilities.

#### Studies Supporting the Spell Read P.A.T. (Phonological Auditory Training)

A third remediation program emphasizing explicit instruction in phonological awareness and decoding is the Spell Read P.A.T (Phonological Auditory Training) program. This program is based on the assumption that reading is primarily an auditory process that is only superficially visual. In other words, in order for students to become efficient in reading and spelling, they must master the sound system of their language and establish strong phonological and auditory skills. Mastery of these skills enables the student to move on to reading fluently with comprehension, and to write efficiently. One major difference between Spell-Read P.A.T. and the other remediation programs presented is its emphasis on meaningful reading and writing. In other words, the importance of reading and writing is to understand what was read or written. A total of 140 carefully defined but unscripted lessons are presented in three phases (Rashotte,

MacPhee & Torgesen, 2001), however, a list and description of these three phases was not presented. Training begins with sounds that are the easiest to hear and manipulate and progresses to the more difficult sounds and combinations. Regardless of grade, students start the program at the beginning of the first phase; however, pacing through the phases varies with the student's progress. One study was found that incorporates Spell Read P.A.T., (Rashotte, MacPhee, & Torgesen, 2001) further supporting the use of remediation programs emphasizing explicit instruction in phonological awareness and decoding.

Rashotte, MacPhee and Torgesen (2001) showed that the Spell-Read P.A. T. program was effective in demonstrating statistically significant effects on several reading measures over a similar contrast group for 115 first- through sixth-grade students with below-average phonetic decoding and word level reading skills. Students were matched and randomly assigned to either the treatment or control group. Upon the completion of the first posttest (posttest 1), the control group also received instruction in the Spell Read P.A.T. program, and were given a posttest (posttest 2) upon completing the program. The first treatment group received 35 and the second group 31 hours of training. Results were examined to include grade-level as well as treatment effects.

Statistically significant group differences were found on all measures except word efficiency, which measures isolated word fluency, however, specific F and p values were not given. Improved reading skills were evident regardless of level of deficiency prior to instruction and were not limited to specific grades, which is in line with the findings of Lovett & Steinbach (1997). Results for group 1 (posttest 1) showed a standard score gain on word identification as measured by the Word Identification subtest of the Woodcock Diagnostic Reading Battery (Woodcock, 1998) of 6.4, 5.5, and 5.5

respectively for grades 1&2, 3&4 and 5&6, while the control group experienced gains of 4.2, 2.0, and 1.8. On word attack, as measured by the Word Attack subtest of the Woodcock Diagnostic Reading Battery (Woodcock, 1998), the treatment group experienced a standard score gain of 15.6, 15.1 and 18.5 while the control group experienced only minimal gains of 3.0, 0.9 and 0.6. On phonological awareness as measured by the Comprehensive Test of Phonological Processing (CTOPP; Wagner, Torgesen & Rashotte, 1999) Elision subtest, group 1 experienced raw score gains of 5.9, 10.0 and 5.3 while the control group experienced minimal gains of 2.2, -1.1 and 2.2. Results from group 2 (posttest 2) showed a standard score gain on word identification of 9.6, 5.3, and 6.9 respectively for grades 1&2, 3&4 and 5&6, while they also experienced gains in word attack of 17.5, 13.5, and 16.0 along with gains on the Elision subtest of the CTOPP of 6.1, 9.4, and 13.1.

This study is notable for matching and randomly assigning subjects, using a control group and subsequently implementing the treatment with the control group to serve as another replication of effect. Other advantages include well-defined measures and analysis of results by grade level. One limitation of this study was lack of stated criteria for selection of the subjects. It is not known whether average IQ was also used along with below average phonetic decoding and word level reading skills, which could make generalizations to reading disabled populations tenuous. In summary, the one study presented using the Spell-Read P.A.T. program (Rashotte et al., 2001) lends support to the use of programs emphasizing explicit instruction in phonological awareness and the alphabetic principle (decoding) by demonstrating statistically significant gains across several reading measures for students with reading disabilities.

### Studies Supporting Phono-Graphix

A fourth remediation program incorporating explicit instruction in phonological awareness and decoding is Phono-Graphix, which teaches that phonemes are the basis for the alphabetic code (McGuinness, McGuinness & McGuinness, 1996). Phoneme-grapheme relationships are taught immediately and not in a two-step process as with other programs. The first goal is to set up a Basic Code for 42 sounds. Digraphs are introduced after one-to-one mapping is stable (creating a “familiar context”). When the child is familiar with the Basic Code and knows it is reversible, spelling alternatives are introduced for each sound from the most to least probable. The complexity of the alphabetic code shrinks, 42 symbols are assigned to 42 sounds. The 72 blends are taught as a combination of two sounds, most of which follow one-to-one mapping. There are 65 spelling alternatives (1 sound-multiple spellings) and 21 code overlaps (one grapheme-multiple sounds) that the subject needs to learn. Phono-Graphix differs from other remediation programs by providing a complete orthographic analysis of the English alphabetic code. McGuinness, McGuinness & McGuinness (1996), lend support the use of remediation programs emphasizing explicit instruction in phonological awareness and decoding by demonstrating substantial statistically significant differences across several reading measures for with students with reading difficulties ages six to sixteen. Although this study did not employ a control group, it demonstrated that the Phono-Graphix program was effective in producing statistically significant pretest-posttest effects on the phonological awareness, word identification, and word attack skills of 87 children, ages 6 to 16, seen in a clinical setting over a two-year period.

Of the 87 students, four were considered “mildly retarded,” IQ below 80 (parent report), and 35 were diagnosed with a “learning disability” by a third party. The 87 students received an average of 9.33 hours of training with all scores reflecting progress up to the 12-hour mark. Reading measures consisted of Word Identification and Word Attack subtests of the Woodcock Reading Mastery Tests-Revised (WRMT-R) (Woodcock, 1987) and phonological awareness was measured by the Rosner and Simon Auditory Analysis Test (AAT) (1971) which uses 8 real and 2 nonsense words with a maximum possible raw score of 10.

Statistically significant improvements in word identification and word attack - were recorded by everyone who received treatment,  $p < .0001$  as determined by a dependent measures t-test. Specific  $t$  values, however, were not provided in the study. An ANOVA was carried out on gain scores with age as an independent variable. Age did not significantly predict change in word identification  $F(1, 84) = 2.45, p > .05$ , but did significantly predict word attack gains  $F(1, 84) = 3.33, p < .05$ , with older children making slightly greater gains. This finding stands in contrast to the findings of Lovett and Steinbach (1997) and Rashotte, McPhee and Torgesen (2001) in which age and grade did not significantly affect a student’s ability to benefit from phonologically based decoding programs. Results from the Word Identification subtests reported by age groups indicated a standard point gain of 13.25, 12.77 and 15.1 respectively for age groups of 6-7, 8-9 and 10-16. Standard score gains experienced for the Word Attack subtest were 16.07, 19.74 and 22.1. Phonological awareness raw scores from the AAT showed an increase 3.2, 2.5 and 3.2 respectively for age groups 6-7, 8-9 and 10-16. It is important to keep in mind that these results were achieved with no more than 12 hours of training and

are far superior to any program reviewed thus far. Strengths of this study are the clear definition and measurement of outcome variables, and the use of standard scores for comparison. Limitations of the study include the lack of a control group and the lack of information given for the selection criteria, especially with regard to learning disability diagnoses, which makes generalization to reading disabled populations difficult.

In summary, programs incorporating explicit training in phonological awareness and decoding have been shown to be effective in improving word identification and word attack skills of students with reading disabilities (Alexander et al., 1991; McGuinness, McGuinness & McGuinness, 1996; Truch, 1994; Torgesen et al., 2001; Rashotte, MacPhee & Torgesen, 2001; McGuinness, McGuinness & McGuinness, 1996). Although each of these programs has a similar instructional focus of relating spoken sounds to written language, they differ in their emphasis of skill importance. While Auditory Discrimination in Depth emphasizes the physical origin of phonemes, Phono-Graphix focuses on the complete mastery of the English spelling code. In contrast, Spell Read P.A.T emphasizes meaningful reading and writing, while PHAB/DI has an equal emphasis on decoding and phonological awareness. The major conclusion to be drawn is that, regardless of the emphasis on skill importance, programs incorporating explicit instruction in phonological awareness and the alphabetic code have been demonstrated to meet the needs of remedial readers.

#### Adult-Mediated Tutoring Interventions

The implementation of remedial intervention approaches may be limited by the demand they place on schools and teachers. In the previous section, the efficacy of certain approaches to remediation was established. In this section we will examine one

of the structural and management variables that may impact the probability that effective remedial programs will be implemented. Specifically, adult mediated tutoring research will be examined as a structure through which reading remediation may be facilitated for studies meeting the following criteria: (1) The use of non-certified personnel as tutors, (2) conducted on English speaking populations, and (3) that addressed the reading skills of children identified as at-risk for or currently experiencing reading failure. Studies supporting adult-mediated reading intervention as an effective supplement to regular classroom instruction will first be reviewed, followed by studies not supporting adult-mediated reading interventions. Strengths and limitations will follow each of the studies. While several adult-mediated tutoring intervention programs have demonstrated success for children at-risk for reading failure on several measures of reading ability, there continues to be a need to test the efficacy of adult-mediated instruction with older populations.

#### Studies Supporting Adult-Mediated Reading Intervention

It is logical that programs that cannot be implemented within the general context of the classroom will have limited utility in addressing the need for more effective reading instruction. One method for providing more intensive reading instruction within the general context of the classroom is the use of tutors. Large contributions of adult-mediated reading interventions were demonstrated in six studies (Fitzgerald, 2001; Vadasy, Jenkins & Poole, 2000; Baker, Gersten & Keating, 2000; Hendrick, 1998; Vadasy, Jenkins, Antil, Wayne & O'Conner, 1997; Morris, Perney & Shaw, 1990). Each study demonstrated statistically significant changes in at least one reading variable measured including word attack, word identification and fluency. Effect sizes ranged



form .36 to 3.13. Table 2 provides a more detailed analysis of studies using adult-mediated reading instruction including variables measured and effect sizes. Although no statistical analysis was used, a smaller contribution for adult-mediated reading instruction was demonstrated for one study (Heins et al. 1999).

Fitzgerald (2001). This study supports the contribution of adult-mediated reading interventions by demonstrating statistically significant differences for word identification and instructional reading level for 64 at-risk first-and second-grade students over a similar group of contrast students. Statistically significant differences were not found for measures of letter names and letter sounds, both in isolation and context. This study examined the effectiveness of a tutoring program using minimally trained college student volunteers on the instructional reading level, word identification in isolation, letter name, letter sounds in isolation, and letter sounds in context skills of 83 first- and second-grade at-risk children. Treatment students (n=64) received two forty-minute tutoring sessions per week over a 25 week-period for a total of 33 hours, while control students received two forty-minute tutoring sessions per week for 6 weeks (n=2), 8 weeks (n=6), 10 weeks (n=3) and 12 weeks (n=8) for a total of 19 within program control students. Students were administered a pre-test, mid-test, and posttest on all reading measures. Forty tutors, who were paid through the America Reads program, received 33 hours of training and were observed once per week by graduate students.

The training program consisted of four parts: (1) repeated reading of familiar texts, (2) word study, (3) writing for sounds, and (4) reading a new book. Reading measures included passages from the Bader Reading and Language Inventory (Bader &

Table 2

## Effect Sizes for Studies Incorporating Adult-Mediated Reading Intervention

Study	N	Hrs.	Variables				
			Word Id.	Word Attack	Comprehension	Fluency	Spelling
Fitzgerald (2001)	83	33.0	3.13*	--	--	--	--
Vadasy et al. (2000)	46	54.0	.91*	1.24*	--	.42	.93*
Baker et al. (2000)	84	48.0	.44	.87*	--	.53*	--
Vadasy et al. (1997)	35	54.0	.70	.43	--	.45	.88*
Hendrick (1998)	30	n/a	--	--	--	--	--
Cobb (2000)	34	10.0	--	--	.35	--	--
Morris et al. (1990)	60	50.0	.37*	--	--	.41*	--

$p \leq .05$

n/a- not available

Wiedsanger, 1994) to determine instructional reading level, the San Diego Quick Assessment (LaPray & Ross, 1986) to measure word identification in isolation. Clay's (lowercase) (1993) Letter Identification subtest of the Observational Survey to measure letter naming while, Clay's (1993) Letter Identification subtest of the Observational Survey part II was used measure letter sounds in isolation and Clay's (1993) writing dictation task was used to measure letter sounds in context.

Statistically significant findings using a Multivariate Analysis of Variance (MANOVA) were found for both instructional reading level  $F(1, 76) = 4.52, p = .03$  and word identification in isolation  $F(1, 71) = 5.09, p = .03$ . Instructional reading level increased from a mean of .04 to 1.22 for the high-treatment group, while reading levels increased from .08 to .37 for the low-level treatment (control) group. Words in isolation increased from a decimal score of .12 to .82 for the treatment group, while the control group experienced an increase from .16 to .36. A major strength of this study was the use a within program control group which allowed all students to receive at least some level of the treatment, while a major limitation of the study include was the lack of a no-tutoring control group.

Vadasy, Jenkins & Poole (2000). This study demonstrated by the finding of statistically significant differences for word attack, word identification, spelling, and writing measures under adult-mediated intervention with 23 at-risk first-grade students over a similar group of contrast students. Treatment students received thirty minutes of tutoring four times per week for 27 weeks for a total of 54 hours of tutoring instruction. Tutors for this study were parents and other adults who were paid a nominally hourly wage and received 14 hours of training as well as being provided weekly feedback. The

training program consisted of 100 scripted lessons each including of 5 to 10 short activities that required between one and fifteen minutes to implement. Lessons focused on segmenting, blending, letter-sound correspondences, word families, writing with invented spelling, reading text with controlled vocabulary, explicit decoding instruction, rime analysis and story reading. Tutors maintained daily logs of attendance and lesson progress. According to these logs, children attended from 54 to 89 lessons (M=72).

Dependent measures for the study were the Word Attack subtest for the Woodcock Johnson Psycho-Educational Battery-Revised (Woodcock & Johnston, 1989) as reported in standard scores, word recognition as reported by the Dolch Word Recognition Test (Dolch, 1939) which uses a list of 220 words of increasing difficulty, grouped by basal reading levels and reported as a raw score. The Bryant Pseudoword (Bryant, 1975) which consist of 50 psuedowords and reported as a raw score was also used for word attack, the Analytical Reading Inventory (ARI; Woods & Moe, 1977) to measure oral reading fluency for both time and accuracy, reported as rate of words read correctly per minute, as well as the Yopp-Singer Segmentation Task (Yopp, 1988) which measures a students ability to segment the sounds of 22 orally presented words and reported in raw scores. Standard scores for the Reading and Spelling subtests of the WRAT-R (Jastak & Wilkinson, 1984) were also used to measure word identification and spelling and finally a curriculum based spelling measure and five minute writing sample scored as number of words correctly spelled were also used as spelling measures.

Statistically significant results as determined by a one-way Analysis of Variance (ANOVA) were found for the WRAT-R Reading subtest  $F = 8.44$ ,  $p = .006$ , Dolch Word List  $F = 8.21$ ,  $p = .006$ , Woodcock Johnston Word Attack  $F = 16.93$ ,  $p = .0000$ , Bryant

Pseudoword  $F= 12.78$ ,  $p= .001$ , WRAT-R Spelling subtest,  $F= 12.78$ ,  $p= .01$ , the curriculum based spelling measure  $F= 10.41$ ,  $p= .002$ , the writing sample spelling measure  $F=6.69$ ,  $p= .013$  and the Yopp-Singer Segmentation task,  $F= 9.89$ ,  $p= .003$ . Table 3 presents the posttest means and standard deviations for all of the dependent measures. One year follow-up data showed that the treatment group still enjoyed a large advantage in phonological reading skills, but performed similarly to the control group in both word recognition and fluency. The superior advantage in phonological reading skills experienced by the treatment group did not, however, result in an increase in word learning over the control group a year later. Some advantages of this study were the use of a control group and random assignment while some limitations included a relatively small sample size, and variation in the number of lessons administered per child.

Baker, Gersten & Keating (2000). Adult-mediated intervention was supported by this study, finding statistically significant group differences for 43 at-risk first-grade students over a similar control group in fluency and comprehension measures. The study examined the effect on reading achievement of a low-cost widely implemented volunteer reading program for 43 students first-grade students who were at-risk for reading difficulties. Students received tutoring twice per week for 30 minutes for 27 weeks a year over two years. Mean tutoring time was 36 hours with a range of 24 to 49 hours. A total of 84 students were selected for the study by teacher referral with 43 randomly assigned to a treatment condition and 41 to a control group. A third group of 36 average achieving students was also included to assess the progress the treatment students made relative to the normative population. The volunteer tutors represented a diverse group with the

Table 3

Posttest Means and Standard Deviations for Vadasy et al. (2000)

Measures	<u>Treatment</u>		<u>Control</u>	
	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>
<i><u>Reading</u></i>				
WRAT-R (SS)	102.45	(18.81)	88.87	(11.38)
Dolch	144.74	(54.95)	102.67	(47.37)
ARI (wpm)	45.36	(34.77)	29.72	(18.19)
<i><u>Decoding</u></i>				
Word-Attack (SS) <sup>a</sup>	109.27	(13.66)	94.12	(10.71)
Bryant	19.45	(11.65)	8.94	(7.79)
<i><u>Spelling</u></i>				
WRAT-R (SS)	97.33	(16.60)	85.30	(12.67)
CBM-Spelling	8.00	(1.98)	5.95	(2.42)
<i><u>Other</u></i>				
Writing <sup>b</sup>	71.00	(22.00)	55.00	(9.00)
Yopp-Singer	15.51	(3.79)	11.15	(5.53)

<sup>a</sup>WRAT-R<sup>b</sup>Percentage of words correctly spelled

majority being members of the business community. Tutors received 1-2 hours of training, during which 30-40 minutes was actually devoted to reading strategies.

Students in all three groups then received a pretest and posttest at the end of first and second grade.

Four types of dependent measures were evaluated: (a) prereading measures, included phonemic awareness and alphabetic understanding; (b) reading accuracy and fluency measures, which included word identification and reading fluency; (c) reading comprehension; and (d) vocabulary. Prereading measures included phonemic segmentation in which examiners orally presented three-phoneme words to students one at a time. Students received 1 point for each phoneme correctly identified and scores were reported as raw scores. Other prereading measures included rapid letter naming in which students were asked to name as many letters as possible in one minute and reported as letters per minute calculated. Reading accuracy was measured by Word Identification Subtest of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1998) and reported as W scores. Oral reading fluency was measured by the number of words read correctly per minute on a written passage on the first or second grade level. Reading Comprehension was measured by the Passage Comprehension Subtest of the WRMT-R and reported as W scores. Vocabulary knowledge was measured by the Word Comprehension, Antonyms, Synonyms, and Analogies Subtests of the WRMT-R and reported in W scores. A second measure of vocabulary was the Expressive One Word Picture Vocabulary Test Revised (EOWPVT-R) and was reported as a raw score. Statistically significant finding using an Analysis of Covariance (ANCOVA) were found for first grade reading fluency,  $F(1, 80) = 7.61, p = .007$ , second grade reading fluency  $F(1, 80) = 6.37, p = .014$  and on the Word Comprehension Subtest of the WRMT-R,  $F(1, 80) = 5.20, p = .025$ . The treatment group, however, scored

substantially below the average achieving group on all measures. Means and standard deviations of all reading measures are presented in Table 4. Advantages of this study include the use of a control group and random assignment at the classroom level, which helps control for the quality of classroom instruction.

Vadasy, Jenkins, Antil, Wayne & O’Conner (1997). The finding of statistically significant group effects on measures word attack and spelling for 20 at-risk first-graders over a similar group of control students in this study further supports adult-mediated intervention. Forty children were selected for the study, stratified and randomly assigned to either a treatment or control group. Tutoring was delivered 30 minutes a day after school, four times per week for 23 weeks, for a total of 53 hours of training. Ten tutors who were paid a nominal hourly wage received a total of nine hours of training. Tutors consisted of parents, grandparents, high school, and college students. The tutoring program consisted of a set of 100 thirty-minute lessons, which consisted of letter sounds

Table 4

Posttest Means and Standard Deviations for Reading Measures in Baker, et al. (2000)

Measure	Treatment		Control		Average	
	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>
Interim Scores (end of first grade)						
<i>Reading accuracy and fluency</i>						
World ID-WRMT-R (W)	409.2	(29.7)	398.9	(24.4)	438.6	(30.2)
Oral Reading Fluency (1 <sup>st</sup> )	27.8	(22.8)	18.7	(17.3)	57.0	(34.2)

(table cont’d)



*Reading Comprehension*

Passage Comp. (WRMT-R)	449.3	(24.4)	443.2	(14.2)	466.1	(16.0)
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Post test Scores (end of second grade)

*Reading accuracy and fluency*

Word ID-WRMT-R (W)	449.4	(30.2)	437.9	(25.9)	470.4	(22.4)
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Oral reading fluency (1 <sup>st</sup> )*	71.3	(35.2)	55.9	(32.1)	98.8	(35.1)
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Oral reading fluency (2 <sup>nd</sup> )*	61.5	(35.5)	45.9	(29.5)	90.5	(38.3)
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*Reading Comprehension*

Word Comp. (WRMT-R)*	472.3	(17.3)	465.4	(16.2)	487.8	(9.7)
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Passage Comp (WRMT-R)	468.9	(16.0)	464.7	(13.1)	481.7	(10.9)
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\*group differences significant at  $p = .05$

and beginning sound identification, rhyming, auditory blending, segmenting, spelling and analogy use, story reading and writing. The tutors were asked to keep logs on lesson progress; however, the logs were not completed consistently and failed to provide an accurate assessment of program implementation.

Dependent measures consisted of word attack, which was measured by the Word Attack Subtest of the Woodcock –Johnson Psycho-Educational Battery-Revised (WJ-R; Woodcock & Johnson, 1989), the Bryant Pseudoword (Bryant, 1975), and a list of 45-Psudeowords and reported as raw scores. Word recognition was measured by the Dolch word recognition test (Dolch, 1939) and reported as a raw score. Oral reading fluency was measured by Analytical Reading Inventory (Woods & Moe, 1977) and reported as words read correctly per minute. Phonemic segmentation was measured by the Yopp-

Singer segmentation task (Yopp, 1998), and a curriculum-spelling list consisting of 10 words was used to measure spelling. Finally, a writing sample was taken and scored as the number of words written correctly.

Statistically significant results using a Multivariate Analysis of Variance (MANOVA), were found for the Bryant Pseudoword, effect size = .55, and the curriculum based spelling measure, effect size = .56. Another MANOVA was administered to determine if those students whose tutors had higher implementation values were significantly different from those students whose tutors had lower implementation values. For this analysis significant differences were found for word identification  $F(3, 34) = 6.05, p = .002$ , spelling and segmentation  $F(4, 33) = 5.67, p = .001$ , and decoding  $F(3, 34) = 3.82, p = .018$ , indicating that the program was more effective for students whose tutors showed higher implementation. Posttest means on the Dolch word list were 131.93 for the treatment group and 123.57 for the control group for the original treatment analysis. When implementation was used as a factor, the group differences were much larger, 171.70 for the high implementation treatment group. A notable result of this study was that the posttest values for low implementation students were actually below that of control students, suggesting that the low-implementation tutoring may have been harmful to those students.

Strengths of this study included stratified random assignment and use of a control group for comparison. One limitation of the study included the time of day of the treatment, after school tutoring, which may have placed extra academic demands upon the students. A second limitation was the inconsistent implementation of the tutoring

program, which may have been responsible for the lack of overall treatment effectiveness.

Hendrick (1998). Support for adult-mediated intervention was demonstrated in this study, which found significant pretest-posttest gains on a measure of instructional grade level for 30 third- through fifth-grade at-risk students. The study examined the effectiveness of using pre-service teachers as tutors on the reading skills of third through fifth grade students. Students received 40-45 minutes of tutoring two to four times per week for an entire school year. Approximately 40 university students, enrolled in a course that required one to one tutoring at an elementary school as part of their pre-service teaching program, served as tutors for the study. Tutors received seven hours of initial training and attended two seminar sessions during the semester. The tutoring program used, Reading One-One (Farkas, 1993), borrowed elements from several literacy programs including Success for All, Reading Recovery, and the Four Blocks, and employed a balanced approach that included reading, writing and working with words. Tutors were allowed to adapt the program to fit the needs of each individual child.

The dependent measure used was instructional grade level and was measured by analyzing student portfolios that included daily running records, comprehension assessments and writing samples collected by the tutor. The portfolio also contained results from the Basic Reading Inventory (BRI) (Johns, 1994). Data were reported as beginning and ending grade level. Overall group grade-level gains of 1.92,  $t(29) = 6.71$ ,  $p = .000$ , were reported. Fourth and fifth grade students made slightly larger gains than did third-graders. Advantages of the study were that instruction was adapted to meet individual student needs as well as the use of pre-service teachers, whom may be better

qualified to deliver instruction than are most volunteer tutors. Limitations of the study included the lack of detail on program procedures, use of non-standardized reading measures for which no reliability or validity figures were available, no report of mean tutoring time, and lack of a comparison group.

Morris, Shaw & Perney (1990). This study supports the use of adult-mediated reading interventions by finding statistically significant group gains for 30 at-risk second- and third-grade students over a similar group of contrast students on measures of word recognition, basal passage reading, and spelling. The purpose of this study was to examine the effectiveness of using adult volunteers as tutors on the reading and spelling skills of second- and third-grade children from an inner city elementary school using the Howard Street tutoring program (Morris, 1990). Over a two-year period, a total of 60 students were selected by teacher referral as being among the bottom third readers and then tested and randomly assigned to either a tutoring or contrast condition. The final sample for the first year included 23 second-graders (11 tutored, 12 contrast) and 11 third-graders (6 tutored, 5 contrast), while the final sample for the second year included 18 second-graders (9 tutored, 9 contrast) and 8 third-graders (4 tutored, 4 contrast). The students in the treatment group were tutored twice a week for one hour per day over an eight-month period for a total of approximately 50 hours. Tutors for the study included volunteers such as undergraduate liberal arts majors, master's students in education and suburban mothers. Tutors received two days of training from a supervisor prior to the start of the program, and were monitored throughout the study. Tutoring lessons were individualized for each student and included: (1) contextual reading at the child's

instructional level, (2) word study, (3) writing, (4) easy contextual reading, and (5) reading to the child.

Dependent measures used included (1) two measures of word recognition, the ability to recognize isolated words in an untimed manner measured by word lists derived from Basic Reading Vocabularies (Harris & Jacobson, 1982) and ability to recognize a list of 30 isolated words taken from the school basal reader, (2) a measure of ability to spell from dictation of 20 first and second grade words taken from the Qualitative Inventory of Word Knowledge (Schlagal, 1989), and (3) basal passage reading accuracy which was determined by assigning pre-specified point values to a series of progressively higher-level reading passages and reported as a combined score. Statistically significant results across both years of tutoring were found for basal word recognition,  $t = 1.98$ ,  $p < .05$ , basal passage reading,  $t = 2.64$ ,  $p < .01$  and spelling,  $t = 2.2$ ,  $p < .02$ , with three of the third grade students being fully remediated on the basal passage reading measure. Strengths of the study included random assignment and well-defined program variables. One limitation of this study was its unclear presentation of data; for example the fact that data were not disaggregated by grade-level, which may have assisted in determining the exact number of students fully remediated.

Heins et al. (1999). Although this study lacked statistical analysis, it supports the use of adult-mediated reading interventions by finding successful gains on measures of grade-level for 16 second- and third-grade children. Heins and colleagues present descriptive research that examined the impact of a structured curriculum and after school tutoring. Eleven second- and five third-grade children were tutored after school for one hour per day four days a week over a seven-month period. The Stetson Reads tutorial

program is based upon the principles of Reading Recovery and consists of five distinct lesson segments: (1) Familiar reading (10 minutes) in which the children read aloud from previously mastered texts; (2) make words (10 minutes) which uses letter cards to make targeted phonemes and generate new phonemes; (3) writing (10 minutes) in which students write their own story of one or two sentences; (4) new book (20 minutes) which is selected following the student's individual lesson plan; and (5) read aloud (10 minutes) in which tutors model good reading behavior such as expressive intonation, discussion of pictures, predictions at key moments, and reaction to the story.

Tutor training consisted of four sessions at the beginning of the program, followed by an additional training session later in the program to address any questions and review strategies already taught. Initial training included word decoding, writing strategies and the use of onsets and rimes. Student progress was measured by Scott Foresman's Reading Recovery testing books and reported by grade levels. A series of criterion referenced unit tests were also administered throughout the school year. Results indicated that at year's end six percent of the students progressed three grade levels, thirty-eight percent progressed two grade levels, while fifty-six percent progressed one grade level. Eighty one percent of the students showed an increase on the criterion referenced unit tests. At year's end six percent of the student remained below grade level, seventy five percent on grade level and nineteen percent above grade level. One major advantage of the study was the use of a well-defined reading recovery program for treatment, while limitations included lack of a control group and lack of specification of the total number of hours tutored, as well a lack of reliability and validity information of

the dependent measures. Furthermore, a test of statistical significance was not administered in this study.

In summary, the studies presented above suggest that adult-mediated reading interventions may be an effective supplement to regular classroom reading instruction. Students in first and second grade have demonstrated statistically significant gains in word identification, instructional reading level (Fitzgerald, 2001), word attack (Vadasy, Jenkins & Poole, 2000), fluency and comprehension (Baker, Gersten, and Keating, 2000) and spelling (Vadasy et al., 1997). In addition, third through fifth grade students have demonstrated statistically significant gains in instructional grade level (Hendrick, 1998), word recognition, basal passage reading, and spelling (Morris, Perney & Shaw, 1990). It should be noted, however, that only one of the studies reviewed, Hendrick (1998) addressed fourth and fifth grade students. Although no statistical analysis was used, Heins et al. (1999) demonstrated some support for adult-mediated reading interventions.

#### Studies Not Supporting Adult-Mediated Reading Intervention

At least one study (Cobb, 2000) does not support the impact of adult-mediated reading intervention for struggling readers. In this study, statistically significant differences were not observed in any of the reading variables measured. While methodological weaknesses and design differences may explain the results of this study, they conflict with those discussed in the above section. The purpose of this study was to examine the effect of using athletes and undergraduate education majors as tutors on the reading skills of 17 at-risk fourth-grade children in a medium sized southwestern college city. Thirty-four children were randomly assigned to either a treatment or contrast condition, with half of the treatment condition students being tutored by volunteer

athletes and half by pre-service elementary teachers. No information was given in regard to the amount of training the pre-service teachers had received.

Students received tutoring 30 minutes per day for two days a week over a ten-week period for ten hours of total tutoring time. Tutors received training at the beginning of the study and follow-up training in three monthly-hour long workshops. The tutor intervention consisted of three distinct components: (1) independent level book reading, in which the child would read aloud to the tutor; (2) practice activities from a state standardized test, which included summarizing written texts and determining the meaning of words in a written text; and (3) journal writing, which included a section for writing unfamiliar words, a second section for in which students would write one or two sentences about the book they had just read, and a third section in which both the tutor and student would compose a story together.

Reading achievement was measured by the Gates-MacGinitie Reading Test (MacGinitie & MacGinitie, 1989) and a follow up measure using the scores of the Texas Assessment of Academic Skills (TAAS) was also used. No significant group differences were found on either measure of reading. These findings in themselves were, however, of interest in that there were no differences between the students tutored by athletes and those tutored by pre-service teachers. One possible reason for this finding may have been attributed to both small group sizes and short duration of treatment variable, only 10 hours. An advantage of this study was the use of random assignment to treatment and contrasts groups while limitations included small sample size, especially with regard to the split of the treatment group and the relatively short duration of the tutoring.



In summary, adult-mediated reading instruction has been demonstrated to be an effective supplement to regular reading instruction. Six studies demonstrated statistically significant gains across several reading measures including word identification, word attack, spelling, and fluency for first- through fifth-grade students (Fitzgerald, 2001; Vadasy, Jenkins & Poole, 2000; Baker, Gersten & Keating, 2000; Hendrick, 1998; Vadasy, Jenkins, Antil, Wayne & O'Conner, 1997; Morris, Perney & Shaw, 1990). One study by Heins et al (1999) lends some support for adult-mediated intervention by demonstrating grade level gains for the majority of its students. One study, Cobb (2000), did not result in the same conclusion; however, weaknesses in data analysis and limited program duration may offer possible explanations for their results. It should be noted that only two of the studies reviewed (Hendrick, 1998; Cobb, 2000) addressed fourth- and fifth-grade students with one finding statistically significant results (Hendrick, 1998) though, only for instructional reading level. There remains a need for research to further examine the effectiveness of adult-mediated reading instruction upon specific reading skills such as word identification, word attack, spelling, and comprehension, for fourth and fifth grade populations.

#### Purpose of the Present Study

The research presented thus far allows for two conclusions. First, interventions emphasizing explicit instruction in phonological awareness and decoding have been demonstrated to produce significant reading gains in the areas of word attack and word identification (McGuiness, McGuiness & McGuiness, 1996). Second, while several adult mediated tutoring intervention programs have demonstrated success for early elementary children at-risk for reading failure on several measures of reading ability,

there continues to be a need to test the efficacy of adult-mediated instruction with older populations.

The proposed study has two purposes: (1) To further test the efficacy of adult-mediated reading instruction on third- through fifth-grade students with reading difficulties and, (2) to determine the effectiveness of a remediation program incorporating explicit instruction in phonological awareness and decoding when delivered by minimally-trained adult volunteers. This study was guided by the following research questions:

1. What is the effect of a systematic tutoring intervention based upon the principles of Direct Instruction, emphasizing explicit instruction in phonological awareness and decoding, on the word attack, word identification, passage comprehension, and oral reading fluency of third-, fourth- and fifth-grade students with reading difficulties?
2. What is the feasibility of using minimally trained college students as tutors for third-, fourth- and fifth-grade students with reading difficulties?

## CHAPTER 3

### METHOD

#### Setting

The study took place in two local elementary schools with similar student populations. School one had a 95.29% African-American population with 75.42% of students receiving free or reduced lunch. The average class size was 21.7 while the average number of special education children per class was 4.6. The school had an 18% special education population with a total student population of 297. School two had a 99.04% African-American population with 93.89% of students on free or reduced lunch. The mean class size was 19.5 and the average number of special education students per class was 5.3. The school had a 17 % special education population with a total student population of 311, and both schools were rated by the state as “academically below average” in the 2000-2001 school year (Louisiana Department of Education, 2001).

#### Participants

##### Tutors

Thirteen undergraduate college students enrolled in a service learning class served as the primary tutors for this study. One additional undergraduate college student, working as part of a federal grant, served as a substitute tutor. Each tutor was assigned to work with two elementary students for three 30-45 minute sessions per week for approximately twelve weeks. All tutoring sessions were conducted during the students’ regular school day.

##### Student

The final sample consisted of 36 students, 18 treatment and 18 contrast, from two local elementary schools in a large southeastern city. The mean age for the treatment

group was 10.76 (SD=1.24) and consisted of 8 third-graders, 6 fourth-graders and 4 fifth-graders, while the mean age for the contrast group was 10.64 (SD=1.11) and consisted of 10 third-graders, 5 fourth-graders, and 3 third-graders. The treatment group consisted of nine boys and nine girls, while the contrast group consisted of eleven boys and seven girls. A Chi-Square analysis revealed no statistically significant differences between treatment and contrast groups for age, gender, number previously retained and number of minutes per day taught in special education.

The following screening criteria for selection of elementary students were used: (1) students must have been identified by their teacher as one of the six lowest readers in the class, (2) attend school at least 90% of the time, (3) speak English as their primary language, (4) possess both vision and hearing within the normal range, and (5) assent to and have their parents consent to participation in the study. Each third, fourth, and fifth-grade teacher recommended and ranked their lowest six readers, with one fourth grade class referring only two students due to both small class size and the fact that only these two students were performing below average. All resource room students were included and ranked according to reading ability. In addition, an entire “acceleration” class of ten “at-risk readers” were also recommended and ranked by their teacher based upon reading ability. To be referred to the “acceleration” class, students must have been at least two grade-levels below in reading upon entering the third grade.

This procedure identified 47 third through fifth-grade students. Eleven students were receiving special education services for specific learning disabilities in a resource placement. Students were paired according to rank. A member of each pair was randomly assigned to either a treatment or contrast group. For example, the lowest reader

and the second lowest reader were paired, third and fourth were paired, etc. Of the original 47 students, 24 were assigned to the treatment condition and 23 to the contrast condition. Included in this number were six treatment and five contrast students from the special education resource classroom, however, four of these five special education control students were lost through attrition: One student's parents refused consent, one student moved away, one was dropped due to excessive absences, and one student mistakenly received an incorrect permission slip for the treatment condition. Of the six treatment students from the special education resource classroom, five were dropped due to lack of contrast-group partners; however, these five students did receive tutoring, but were not included in the study.

Four contrast students and one treatment student from the original non-special education sample were dropped due to scoring in the average to high average range on all pretest measures (standard scores above 95), and another treatment student was dropped for excessive absences, leaving a total of 17 treatment and 15 contrast students from the original sample with each condition having one special education student. No additional sampling from the original elementary school was done due to the following two factors. First, the entire third through fifth-grade special education had been sampled. Second, the inclusion of additional non-special education students may have increased the possibility of acquiring students scoring in the average to high average range.

To replace the special education students lost through attrition, an additional eight 3<sup>rd</sup> through 5<sup>th</sup> grade students, seven identified with specific learning disabilities and one identified as developmentally delayed, were selected from another local elementary school with similar student-population demographics. Four of the children were in a

resource room placement and four in a self-contained placement. The eight students were teacher-ranked according to reading ability and randomly assigned to either treatment or contrast conditions with four receiving the tutoring treatment and four assigned to the contrast group. Of the four treatment condition students, two were third graders and two were fourth graders. The four contrast condition students consisted of 3 third-graders and 1 fourth-grader making a total of 21 treatment and 19 contrast students in the overall student sample. Shortly after tutoring began, two of the regular-education students from the original treatment sample moved, another regular education treatment student was dropped due to behavior concerns, and one regular education contrast student moved away, leaving a final sample of 18 treatment and 18 contrast students.

### Teachers

A total of 11 teachers, seven from school one and four from school two, had students participating in the study. Of the seven teachers from school one five possessed bachelor's degrees while two possessed master's degrees. All of these teachers were female and averaged 12 years of teaching experience (SD=8.90). The four teachers at school 2 were female, possessed bachelor's degrees, and averaged 16 years experience (SD=10.21). A Chi-Square analysis revealed no statistically significant differences in teacher variables between the two schools. A more detailed analysis of teacher and student demographic information is presented in Appendix A.

### Procedures

#### Tutoring Intervention

Treatment condition students received 30-45 minutes of tutoring 3-4 times per week. In school one, students were tutored during the school day in specially arranged

desks in the hallway of the main school building and in the school's auditorium. In school two, students were tutored in specially designated reading rooms set up by the school administrators. All tutoring took place during the regular school day. Additional volunteer tutoring in both reading and math instruction by certified personnel was available to students in school one.

Upon arriving at their designated school, tutors picked up their binders, which contained scripts for the word-study and book reading activities, as well as word study lessons sheets (see Appendix B) and student folders. Student folders contained student logs, in which the tutor would write the date, time, word-study lessons covered, and book read for that day. The use of the student logs ensured that a substitute tutor could resume tutoring on the appropriate lesson. Also contained in the student folders were the written student responses for the word study activities and book reading summaries.

Upon the conclusion of the tutoring, tutors would fill in the appropriate information in the students logs (see Appendix B) as well as a brief one sentence summary of the day's activities which might include any problems the student may have encountered, a general performance assessment, or any lessons the student may have needed to repeat. Tutors alternated the order, in which they tutored their students, so as not to cause the student to miss the same general subject-area instruction on consecutive days. The majority of tutoring took place in the afternoons during science and social studies instruction. No tutoring was done during students' daily reading instruction or physical education periods.

### Testing Personnel

The primary researcher and an undergraduate student worker conducted all testing. The primary researcher was doctoral student with certification mild/moderate disabilities familiar with all test implementation procedures. The primary researcher was trained in the administration and scoring of formal assessments including all assessments conducted as part of this research. The undergraduate student worker was trained and had each day's initial testing procedure observed by the principal investigator to ensure proper test implementation.

### Design and Statistical Analysis

A pretest-posttest control group design with random assignment (Campbell & Stanley, 1963) was used for this study. Students were assigned to either treatment or contrast conditions using a stratified random sampling technique (Govindarajulu, 1999) in which students were paired according to teacher ranking and randomly assigned to either treatment or control conditions. The stratified random sampling technique allows for each treatment student to have a paired control student with similar characteristics with regard to academics and teacher variables. In other words, each treatment student has a paired control student with similar reading abilities from the same classroom. Students in both treatment and control conditions were then given a pretest on measures of passage comprehension, word identification, word attack, and oral reading fluency. Students in the treatment condition then received 14.5 hours of tutoring. Finally, both control and treatment groups were given a posttest on the same measures upon the conclusion of the training program.



All statistical analyses were conducted using SPSS 11.0 for Windows. Tests were scored by the primary researcher and verified by the intervention program developer.

Scores were entered in an EXCEL spreadsheet, and transferred to SPSS for analysis. All figures were verified by comparing a printout of the data to actual test protocols. Next, a one-way analysis of variance (ANOVA) of gain scores by treatment condition for all dependent measures was conducted (alpha-level of  $p = .05$ ) for overall treatment versus contrast group differences. Finally, data were aggregated by placement, regular education versus special education, and independent samples t-tests ( $p = .05$  significance level) were conducted for both regular and special education-group differences by treatment condition on gain scores for all dependent measures.

### Measures

The three reading subsets of the Woodcock-Johnson Psycho-Educational Battery were administered in the following order: (1) Word-Letter Identification, (2) Word Attack, and (3) Passage Comprehension. Next, two curriculum-based measures of oral fluency were taken by having each student read for one minute on both a second and third grade passage from Monitoring Basic Skills Progress (Fuchs, Hamlett & Fuchs, 1995).

#### Word Identification

Word Identification refers to the ability to correctly identify words and letters. Word Identification was measured by the Letter-Word Identification subtest of the Woodcock Johnston Psycho-Educational Battery-Revised (Woodcock & Johnston, 1989). The test consists of a maximum of 57 items which become increasingly more difficult as they present words that appear less and less frequently in written English. Testing was concluded when the student reached a ceiling level, six consecutive items missed on a

page. Each student's chronological age was used to determine standard scores ( $\mu=100$ ,  $SD=15$ ). The Letter-Word Identification subtest uses parallel forms and has a median internal consistency reliability of .918. Measures of concurrent validity indicate the relative effectiveness of a test in assessing a subject's behavior when compared to an independent criterion measure. Concurrent validity for the reading cluster of the Woodcock-Johnson Psycho-Educational Battery-Revised ranges from .63 to .86 when compared to tests including the Wide Range Achievement Tests-R and the Peabody Individual Achievement Test. The reading cluster includes the word identification and passage comprehension subtests (Woodcock & Mather, 1989).

### Word Attack

Word Attack measures the subject's skill in applying phonic and structural analysis skills to the pronunciation of unfamiliar printed words. Word Attack was measured by the Word Attack subtest of the Woodcock-Johnston Psycho-Educational Battery-Revised (Woodcock & Johnston, 1989). The Word Attack Subtest consists of 30 items and testing is discontinued when the subject misses six consecutive items. If the subject has a raw score of 8 or less on the Word Identification subtests, the Word Attack subtest does not need to be administered and a raw score of 0 is assumed. The Word Attack subtest has a median reliability of .914. Evidence of content validity included intercorrelations among the subtests of the Woodcock-Johnson Psycho-Educational Battery-Revised. These ranged from .63 to .76 for students who were 9 years of age (Woodcock & Johnston, 1989).

### Passage Comprehension

Passage comprehension measures a subject's ability to understand the meaning of brief passages. Passage comprehension was measured by the Passage Comprehension subtest of the Woodcock-Johnson Psycho Educational Battery-Revised (Woodcock & Johnson, 1989). As stated previously, concurrent validity for the reading cluster, which includes passage comprehension, ranges from .63 to .86 (Woodcock & Mather, 1989).

In this subtest the subject provides words that would be appropriate in the context of a short passage or sentence. The test consists of forty-three items of increasing difficulty and is concluded when the subject misses six consecutive items. Raw scores were calculated and converted to standard scores. The passage comprehension subtest has a median reliability of .902.

### Curriculum Based Measure (CBM) of Oral Reading Fluency

Oral reading fluency was measured by using stories from the second and third grade levels of Monitoring Basic Skills Progress (Fuchs, Hamlett & Fuchs, 1995), a curriculum based measurement (CBM) program. Research indicates that CBM can accurately, meaningfully and sensitively describe progress over time (Marston, 1989). One standard method of CBM is determining the number of words read aloud correctly in 1 minute from passages randomly sampled from a constant level of the student's curriculum. The reliability and validity of this standard CBM methodology is strong (Fuchs, 1986; Shinn, 1989). In this study, students read each story orally for 1 minute to project staff. Scores were calculated the number of words read correctly per minute (CWPM). The psychometric properties of this type of measurement are very high (Deno, 1985; Fuchs et al., 1995).

## Adult Mediated Instruction

The intervention involved the use of trained adult tutors to augment reading instruction for students at-risk for or experiencing reading delays. The characteristics of the instructional program and tutors are described in the following sections. The intervention included two sets of activities or routines: (a) Word Study, which addresses word-level reading with an emphasis on the development of critical phonological skills and (b) Book Reading, which addresses fluency development and comprehension strategies. These routines borrow from the work of others, including basic principles of Direct Instruction (Carnine, Silbert & Kameenui, 1997), peer tutoring programs (Mathes, Fuchs & Fuchs, 1995; Mathes, Howard, Allen & Fuchs, 1998; Mathes, Torgesen, & Allor, 2001) and a volunteer tutoring program (Allor, in preparation).

### Word Study (15-20 minutes)

The Word Study component was code-focused and designed to develop phonological awareness and the alphabetic principle. In this segment, students were asked to first identify target sounds for the lessons. Next, students were given two opportunities to write a list of five words that incorporated the target sounds of the lesson. After the first opportunity, the tutor would circle any incorrect answers, provide corrective feedback, and then give the student another opportunity to correctly spell the word. In the third part of word study, students were asked to read a list of seven words incorporating that lesson's target sound. In the fourth part of word study, students orally spelled and then read sight words. In the fifth part, students were instructed to read a list of thirty to forty words incorporating the target sounds and sight words. Finally, students

were asked to write two sentences composed mainly of sight words and words containing target sounds.

Word Study lessons included review of previous sounds and words to address skill maintenance. They were divided into A, B, and C lessons to address skill mastery. Students were required to miss no more than 4 words in the final word list on a C lesson (a 90% mastery criteria) before moving on to the next A lesson. If students did not meet the 90% criteria, tutors were instructed to have them repeat the lesson until the mastery criteria had been reached. If a student had difficulty repeating the C lesson, tutors were instructed to go back to either the A or B lesson until the student could successfully master that lesson.

#### Book Reading (15-20 minutes)

The second routine, Book Reading, was designed to address fluency as well as develop comprehension strategies. Books were assigned based upon the children's current reading levels and sound mastery. Some of the reading materials used included supplemental readers from the Open Court Reading Program (SRA/McGraw-Hill, 2000) as well as other more advanced chapter books for those students with higher word identification and word attack skills. Students were first instructed to predict story events by reading the title of the book, or chapter if a more advanced text was used. Tutors were instructed to encourage specific responses from the students whenever possible. Students were also asked to review stories or chapters read in the previous tutoring session. Next, both the tutor and student took turns reading from the assigned text for the day. Students were then asked to orally summarize each page in ten words or less by telling the most important thing about the "who" or "what" of the story (Fuchs, et al. 2001).

Finally, students were asked to sum up the entire session's reading, first orally and then in written form. More advanced decoders were asked to write several short sentences identifying main characters, setting, and events of the story and in some cases were asked to write a paragraph or two on the days reading. A new component to address fluency was added at the midpoint of the study in which the students reading in chapter books were asked to pick a paragraph or page of their choosing and to read it two times for one minute each. Tutors were instructed to time the reading and to keep a record of correct words read per minute on a specially designed graph. Tutors also graphed the number as well as and type of student errors.

#### Tutor Training and Supervision

Thirteen students, enrolled in a university service learning class and one student in a federal work-study program served as tutors for this study. Tutors attended a total of four one-hour training sessions throughout the Spring 2002 semester. Two of the training sessions were conducted prior to the beginning of tutoring, with the remaining two sessions interspersed throughout the semester. Training sessions consisted of the following components: (1) instruction on how to implement the program, (2) tutors role-playing implementation, and (3) a feedback session to address details and any unusual circumstances that may have occurred. Tutors also received feedback on-site from the researcher to address issues ranging from implementation to student behavior. Tutor training was conducted based upon a scripted lesson created at the beginning of the semester. Modifications to the script were made periodically to clarify lessons for tutors.

Tutors received supervision on-site from both the primary researcher and program developer who was an assistant professor at a local university. The primary researcher

spent three days a week on-site at both schools. The program developer spent an average of one day per week on-site usually alternating between schools. Supervisory activities included monitoring lessons, providing feedback to tutors, monitoring student logs and tutor attendance, as well as the collection of procedural integrity and reliability data.

## CHAPTER 4

### RESULTS

#### Treatment Fidelity

Treatment fidelity is the degree to which programs are implemented with precision and accuracy (Rubin & Babbie, 2001). Low treatment fidelity can threaten the internal reliability of the study casting doubt on the effect of the treatment as the cause of change in dependent measures (Rubin & Babbie, 2001). Treatment fidelity was measured using a specially designed 59-item checklist (see Appendix B), based upon a script that outlined the tutoring procedure, possible student responses, mastery criteria, and tutor feedback procedures. Tutors received a '1' if the behavior was observed, a '0' if the behavior was not observed, or an 'n/a' if the behavior did not apply to the tutoring lesson. For example, if the behavior read, "provides immediate corrective feedback for errors" and no student errors occurred for that section, the tutor received a score of 'n/a' for that item on the checklist. Percentage scores were calculated by adding up the total number of '1's' and dividing it by 59 minus the total number of n/a's. For example, if a tutor were to receive 45 ones, 5 zeroes and 9 n/a's, then the treatment fidelity for that session would be 45/ 50, or 90 percent.

Table 5 provides a summary of tutoring time, average number of sessions, and average session time. Tutors conducted a total of 471 sessions throughout the study. Treatment fidelity measures were taken on 50 sessions (approximately four per tutor) periodically across the semester approximately every three weeks per tutor. Overall procedural integrity for these 50 sessions was 89.8%. Overall procedural integrity was 94.7% for the Word-Study segment and 78.2% for the Book Reading segment. One tutor



was retrained during the semester after scoring below 80% procedural integrity. The tutor received verbal feedback as well as a demonstration of correct procedures by the researcher and was observed for the following two sessions. The tutor met the 80% minimum implementation criteria on the next observation.

Table 5

Tutoring Summary

	School 1		School 2		Overall	
	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>
Measures (total per student)						
Avg. number of sessions (SD)	26.71	(3.38)	24.25	(7.41)	26.16	(4.42)
Avg. number of minutes (SD)	900.35	(124.85)	787.50	(272.32)	875.20	(165.34)
Avg. minutes per session (SD)	33.76	(2.32)	32.17	(1.58)	33.41	(2.25)

Inter-Observer Agreement and Chi-Square Analysis for Extra Tutoring

Inter-observer agreement refers to the degree to which two independent observers observed the same phenomena (Alberto & Troutman, 1998). Inter-observer agreement was taken on 12 of the 50 observed sessions. Overall reliability calculated using point-by-point agreement was 90.1%. Inter-observer agreement was calculated as (agreements / (agreements + disagreements) multiplied by 100 (Alberto & Troutman, 1998).

Teacher-report information obtained from student demographic surveys (see appendix A) indicated that a larger number of contrast students received extra tutoring outside of the study than did treatment students. Teachers were asked to indicate approximately how much extra tutoring each child participating in the study received, not

including the tutoring from the current study. Results indicated that ten contrast students and eight treatment students received extra tutoring more than once per week. Three contrast students and one treatment student received additional tutoring once per week. One contrast student and one treatment student received additional tutoring less than once per week. Finally, eight treatment condition students and four contrast students received no extra tutoring outside the study. A Chi-Square analysis revealed statistically significant group differences, with regard to amount of extra tutoring,  $\chi^2(3, N = 36) = 10.89, p = .01$ .

#### Overall Treatment versus Contrast

Students receiving the tutoring treatment significantly outperformed a similar group of contrast students on the measure of word identification, but significant differences on measures of word attack, fluency and comprehension were not detected. Although significant differences were not found, means were all in favor of the treatment group. Additionally, effect sizes for each of the measures were moderate to high, ranging from .40 to 1.34. Also, when the scores of the special education students were removed, significant differences for the regular education treatment students were found on word identification, second grade fluency, and combined fluency measure, but not on word attack or comprehension. Table 6 displays pretest means, standard deviations, and p-values for both the treatment and contrast groups on all measures. Table 7 displays pretest versus posttest means, standard deviations and ANOVA results for both the treatment and contrast groups on all measures. No significant interactions were revealed for grade or school.

### Word Identification

Statistically significant group differences over a contrast group of similar students were found at posttest for word identification. As Table 6 indicates, pretest measures were slightly higher for the contrast conditions, however, an Analysis of Variance revealed no significant group differences at pretest. At posttest the treatment group had a standard score gain of 5.39 while the contrast group posted a standard score loss of 0.39. A one-way Analysis of Variance (ANOVA) using gains scores for treatment versus contrast group revealed a statistically significant difference  $F(1,34) = 16.25, p = .000$ , with a large effect size ( $ES = 1.34$ ).

### Word Attack and Passage Comprehension

No statistically significant group differences were found at posttest for word attack and passage comprehension. A one-way Analysis of Variance (ANOVA) revealed no significant group differences on Word Attack between groups at pretest. The treatment condition had a standard score gain of 7.27, while contrast group posted a standard score gain of 2.33. An ANOVA conducted on standard score gains, however, revealed no statistically significant differences on this measure  $F(1,34) = 3.32, p = .077$ , with a medium effect size  $ES = .61$ .

No significant group differences were found at pretest for passage comprehension. At posttest, treatment students had a standard score gain of 3.55, while contrast students posted a gain score of .44. No significant group differences as determined by an ANOVA were found  $F(1, 34) = 1.41, p = .24$  with a medium effect size ( $ES = .40$ ).

## Fluency

No statistically significant group posttest differences were found on any of the fluency measures. No significant group differences were found for mean second grade fluency at pretest. At posttest, the treatment condition students posted a mean gain score of 21.28 correct words per minute (CWPM), while the contrast students posted a mean gain score of 13.08. An ANOVA conducted on gain scores revealed no statistically significant differences between groups  $F(1, 34) = 2.58, p = .12$  with a medium effect size ( $ES = .48$ ). For third grade fluency, no statistically significant group differences were revealed at pretest. Treatment condition students experienced a gain of 21.06 (CWPM) at posttest, while control students posted a gain score of 13.16. An ANOVA conducted on gain scores revealed no significant group differences  $F(1, 34) = 3.35, p = .08$  with a medium effect size ( $ES = .56$ ). A third fluency measure, words per minute gained, was calculated by averaging words per minutes gained on both the second and third grade fluency measures. The eighteen treatment condition students had a mean words per-minute gained average of 21.67 ( $SD=14.47$ ) while the control group had an average gain of 13.06 ( $SD=9.97$ ). An Analysis of Variance (ANOVA) revealed no statistically significant gains, however this combined fluency score did approach significance  $F(1, 34) = 3.833, p = .058$ , with a medium effect size ( $ES = .65$ ).

### Regular Education and Special Education Comparisons

#### Word Identification

Statistically significant differences for word identification at posttest were observed for both the regular education and special education groups. Table 8 displays the pretest versus posttest scores for the regular education population, while Tables 9 and

10 display pretest versus posttest scores for the special education group. At posttest the thirteen treatment group students had a mean score gain of 5.70, while the contrast group had a standard score gain of .62. An independent groups t-test on gain scores for treatment versus contrast regular education revealed a statistically significant difference  $t(24) = 2.87, p = .01$ . The five special education treatment students had a standard score gain of 4.60 while the five special education contrast students experienced a standard score loss of 2.40. An independent groups t-test on standard score gains revealed a significant group difference  $t(8) = 3.96, p = .004$ .

### Word Attack

No statistically significant differences for word attack were observed at posttest for both the regular and special education treatment groups. At posttest the regular education treatment students had a standard-score gain of 6.54, while the regular education contrast students posted a gain score of 2.08. An independent groups t-test on gain scores revealed no significant group differences  $t(24) = 1.26, p = .22$ . Meanwhile, special education treatment students had a mean score a gain of 11.40, while special education contrast students posted a mean score gain of 3.40. An independent groups t-test revealed no significant group differences  $t(8) = 1.33, p = .22$ .

### Passage Comprehension

No statistically significant differences for passage comprehension were observed at posttest for either the regular education or special education treatment groups. At posttest the regular education treatment students experienced a mean standard-score gain of 3.07. The regular contrast students also posted a mean standard score gain of 3.07. No statistically significant differences were found as might be expected for identical group

gain scores  $t(24) = 0.00$ ,  $p = 1.00$ . At posttest the five special education treatment students achieved a mean standard score gain of 4.80, while the special education contrast students posted a mean loss of 6.40 standard points. No statistically significant group differences were found  $t(8) = 1.83$ ,  $p = .11$ , however it is notable that the standard score differences between groups was 11.20; whereas no standard score differences were noted for the regular education groups.

### Fluency

Statistically significant posttest differences for second grade and combined fluency were observed for the regular education treatment group, while no statistically significant posttest differences were observed for the special education treatment students. With regard to second grade fluency, regular education treatment students had a mean score gain score of 26.85, while the regular education contrast students posted a gain score of 15.00. A statistically significant group difference using an independent groups t-test on gain scores was found  $t(24) = 2.19$ ,  $p = .03$ . Meanwhile, special education treatment students experienced a mean score gain of 6.80, while the special education contrast students posted a mean gain score of 8.00. No statistically significant differences were found between these groups  $t(8) = -.13$ ,  $p = .90$ .

For third grade fluency, regular education treatment students experienced a gain of 24.08 (CWPM), while the regular education contrast students posted a mean gain score of 15.38. An independent samples t-test revealed no statistically significant differences between group gain scores  $t(24) = 1.68$ ,  $p = .10$ . Meanwhile, the five special education treatment students had a gain of 13.20 (CWPM), while the special education contrast

group posted a gain score of 7.40. An independent samples t-test found no statistically significant group differences for gain scores  $t(8) = .86, p = .42$

Finally, with regard to combined fluency, the thirteen regular education treatment students had a mean word-per-minute gain of 25.46 (SD=12.70), while the thirteen regular education contrast students had a mean gain of 15.12 (SD = 10.49). An independent samples t-test revealed a statistically significant group difference  $t(24) = 2.26, p = .03$ . For the special education group the treatment students posted an average gain of 10.70 (SD=13.86) while the five contrast students had an average gain of 7.70 (SD=6.54). No significant group differences were found  $t(8) = .34, p = .75$ . It is notable that when the special education scores were removed, the regular education treatment students experienced a statistically significant group gain on two of the three fluency measures.

Table 6

Pretest Results of Dependent Measures

Variable	Treatment Group		Contrast Group		F(df)	p
	<u>M</u>	( <u>SD</u> )	<u>M</u>	( <u>SD</u> )		
Word Identification (SS)	82.50	(13.70)	86.83	(13.15)	.938(35)	.34
Word Attack (SS)	82.67	(12.96)	84.00	(13.41)	.092(35)	.94
Passage Comprehension	90.05	(12.95)	93.28	(15.72)	.450(35)	.51
Fluency (2 <sup>nd</sup> Grade-WPM)	72.11	(32.17)	75.78	(30.08)	.125(35)	.73
Fluency (3 <sup>rd</sup> Grade-WPM)	77.22	(33.66)	82.56	(31.04)	.244(35)	.62



Table 7

Pretest and Posttest Achievement Scores (Standard Scores, except for Fluency Measures (Words per Minute))

Measure	Tutoring (n=18)				Contrast (n=18)				F(1,34)	
	<u>pre</u>	<u>pre</u>	<u>post</u>	<u>post</u>	<u>pre</u>	<u>pre</u>	<u>post</u>	<u>post</u>		
	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>	<u>M</u>	<u>(SD)</u>		
<u>Woodcock Johnson-Revised</u>										
Word Identification	82.50	(13.70)	87.89	(14.96)	86.83	(13.15)	86.44	(14.42)	***16.25	
Word Attack	82.67	(12.96)	89.94	(10.96)	84.00	(13.41)	86.33	(11.67)	3.32	
Passage Comprehension	90.06	(12.96)	93.61	(11.41)	93.28	(15.71)	93.72	(17.21)	1.41	
<u>Fluency- Monitoring Basic Skills Progress</u>										
2 <sup>nd</sup> Grade Passage	72.11	(32.17)	93.39	(28.73)	75.78	(30.08)	88.83	(28.73)	2.58	
3 <sup>rd</sup> Grade Passage	77.22	(33.66)	98.28	(43.07)	82.56	(31.05)	95.72	(34.76)	3.35	
Combined /Gain Score									3.83	

\*\*\* p < .001

Table 8

Prestest and Posttest Achievement Scores Regular Education Students

Measure	Tutoring (n=13)				Contrast (n=13)				p	
	<u>pre</u>	<u>post</u>	<u>pre</u>	<u>post</u>	<u>pre</u>	<u>post</u>	<u>pre</u>	<u>post</u>		<sup>a</sup> t (24)
	M	(SD)	M	(SD)	M	(SD)	M	(SD)		
Woodcock-Johnson-R (standard scores)										
Word Identification	88.38	(8.01)	94.08	(10.08)	92.62	(7.03)	93.00	(8.28)	*2.87	*.01
Word Attack	87.54	(10.05)	93.23	(10.12)	88.77	(7.91)	90.69	(8.19)	1.26	.22
Passage Comprehension	95.08	(8.86)	98.15	(6.90)	99.31	(10.85)	102.38	(8.51)	0.00	1.00
Fluency-Monitoring Basic Skills Progress (words per minute)										
2 <sup>nd</sup> Grade Passage	81.69	(24.82)	108.54	(27.72)	84.92	(24.73)	99.92	(21.49)	*2.19	*.03
3 <sup>rd</sup> Grade Passage	90.92	(21.39)	115.00	(31.23)	91.77	(25.50)	107.15	(25.49)	1.68	.10
Combined/gain score									*2.26	*.03

\* p< .05 level <sup>a</sup>t-test calculated on gain scores

Table 9

Pretest and Posttest Means and Standard Deviations for Special Education Treatment Group

Variable	Pretest		Posttest		Change
	<u>M</u>	( <u>SD</u> )	<u>M</u>	( <u>SD</u> )	
Word Identification (SS)	67.20	(14.13)	71.80	(14.10)	4.60
Word Attack (SS)	70.00	(11.51)	81.40	(8.79)	11.40
Passage Comprehension (SS)	77.00	(13.51)	81.80	(12.99)	4.80
2 <sup>nd</sup> Grade Passage (WPM)	47.20	(38.33)	54.00	(35.36)	6.80
3 <sup>rd</sup> Grade Passage (WPM)	41.60	(35.30)	54.80	(41.07)	13.20

Table 10

Pretest and Posttest Means and Standard Deviations for Special Education Contrast Group

Variable	Pretest		Posttest		Change
	<u>M</u>	( <u>SD</u> )	<u>M</u>	( <u>SD</u> )	
Word Identification (SS)	71.80	(13.99)	69.40	(13.24)	-2.40
Word Attack (SS)	71.60	(17.24)	75.00	(12.49)	3.40
Passage Comprehension (SS)	77.60	(16.47)	71.20	(12.99)	-6.40
2 <sup>nd</sup> Grade Passage (WPM)	52.00	(32.14)	60.00	(26.14)	8.00
3 <sup>rd</sup> Grade Passage (WPM)	58.60	(33.95)	66.00	(40.71)	7.40

## CHAPTER 5

### DISCUSSION

The current study examined the effect of adult-mediated reading instruction on thirty-six third through fifth grade students at two elementary schools. At the beginning of the study all students demonstrated lower than average reading scores across three measures of word-level reading skills. The following two research questions were addressed: (1) what is the effect of a systematic tutoring intervention based upon the principles of Direct Instruction on the word attack, emphasizing explicit instruction in phonological awareness and decoding, on the word attack, word identification, passage comprehension, and oral reading fluency of third, fourth and fifth grade students with reading difficulties? (2) What is the feasibility of using college students as tutors for third, fourth and fifth grade students with reading difficulties?

#### Summary of Results

##### Question 1

Third through fifth grade students receiving the tutoring treatment significantly out gained a similar group of contrast students on the measure of word identification, but significant differences on measures on, word attack, fluency and comprehension were not detected. However, when the results of the special education students were removed, regular education treatment students also showed statistically significant gains in second grade fluency, and a combined fluency measure.

On the measure of word identification, both regular and special education treatment students posted similar mean score gains. For word attack, however, special education treatment students posted higher mean gains with greater variance than did

regular education treatment students. One possible explanation for this result may be attributed to the fact that the special education students tended to have lower pretest scores than did the regular education students, and thus had more room to demonstrate gains.

On the measure of passage comprehension, a very interesting contrast occurred between the regular and special education populations. Both regular education treatment and control groups experienced the same gain on this measure. There are at least three possible explanations. First, the mean pretest score on this measure was in the average range for both of the regular education treatment and contrast groups, possibly allowing less room for improvement. Second, the fact that the entire regular education sample for this study came from the same school suggests possible school and teacher effects. Furthermore, this school also had a number of other volunteer tutoring programs ongoing during the study and the majority of the contrast students from this school were involved in at least one of these programs suggesting a possible extraneous treatment effect for the regular education control students. In other words, the regular education contrast students gain in passage comprehension may have been attributed to one of the other tutoring programs that were in place at the school at the time of the study. Finally, the book reading section of the intervention, which contained the comprehension component, had a significantly lower fidelity of treatment, therefore possibly contributing to the lack of stronger results for the treatment population.

For the special education students, treatment students experienced a mean gain while contrast students experienced a mean loss on the comprehension measure. The special education population experienced the largest difference in gain scores on this

measure for treatment versus control groups; however, the amount of variance in the scores kept this variable from reaching statistical significance. Furthermore, the fact that eight of ten special education students were from school two, may suggest another possible school effect. Whereas school one had both extensive and various extra tutoring programs in place, school two did not. This may lend support for the effects of the intervention program as possibly being responsible for the gains of the special education treatment students at school two.

On the measures of fluency interesting results were found with regard to student placement. Regular education students posted larger gains in fluency than did special education students regardless of treatment. As stated above, with the special education population data removed, regular education treatment students made statistically significant gains on both second grade and overall fluency measures. Furthermore, regular education students made larger gains in general than did special education students.

The data seem to further support the effectiveness of this supplementary reading instruction in that four of the eighteen treatment students were found to be at grade and age-appropriate levels for all measures after only a brief intervention period. An interesting outcome was that one of the contrast students was also functioning at grade and age-appropriate levels by the end of the study. This student did, however, receive tutoring outside the study, and it would be interesting to know both the content and extent of this tutoring.

## Question 2

What is the feasibility of using college students as tutors for third-, fourth- and fifth-grade students with reading difficulties? The data from this study support that tutoring from

non-certified adults, specifically college students, can make a meaningful difference in the reading skills of children with reading difficulties. Although the tutors in this study received minimal training, the fidelity of implementation for this study was high enough to produce statistically significant gains. With three one-hour training sessions, all but one tutor conducted the lessons with at least 80% accuracy. As described earlier, only one tutor needed additional, individual assistance to achieve this goal. Tutor attendance was generally high. Tutoring was a requirement for the service-learning course in which they were enrolled. Incentives were in place to motivate students to attend regularly and to make up any sessions missed.

#### Comparison to Other Adult-Mediated Instruction Studies

This section compares the results of this study to other adult-mediated reading instruction studies. One effective method for comparing studies is the use of effect sizes. Effect sizes compare mean gains of the treatment group versus the mean gain of the contrast group. Effect size is calculated as the difference between the group means divided by the pooled standard deviation (Cohen, 1988). By comparing effect sizes we can determine the effectiveness of the intervention on each dependent measure. Table 11 displays the effect sizes for all dependent measures for both this study and the other adult-mediation studies reviewed. Comparison of effect sizes seems to indicate that the current study was as effective as many studies employing a greater number of subjects and longer intervention periods. While the effect size for word identification ranks second to only Fitzgerald (2001) it surpassed many studies with both greater intervention time and number of subjects. With regard to word attack, this study ranks behind only Vadasy et al. (2000) and Baker et al. (2000), both of which had a greater number of



Table 11

Effect Sizes (E.S.) for Studies Incorporating Adult-Mediated Reading Instruction

<u>Study</u>	N	<u>Hrs.</u>	Word ID	<u>Variables</u>			
				Word Attack	Comprehension	Fluency	Spelling
Fitzgerald (2001)	83	33.0	*3.13	--	--	--	--
Vadasy et al. (2000)	46	54.0	*.91	*1.24	--	.42	*.93
Baker et al. (2000)	84	48/0	.44	*.87	.32	*.53	--
Vadasy et al (1997)	35	54.0	.70	.43	--	.45	*.88
Hendrick (1998)	30	n/a	--	--	--	--	--
Cobb (2000)	34	10.0	--	--	.35	--	--
Morris et al. (1990)	60	50.0	*.37	--	--	*.41	--
Lachney (2002)	36	14.5	*1.34	.61	.40	.65	--

\*  $p \leq .05$ 

n/a-not available

subjects and nearly three times the amount of treatment time. Although significant differences were not detected on comprehension, the effect size (.40) was higher than the two other studies, Cobb (2000) and Baker et al. (2000), measuring this variable. For fluency, the effect size in the current study surpassed that of all other adult-mediated reading intervention studies.

### Limitations

The results of this study should be considered in the light of the following limitations. First, the small sample size reduced the statistical power of the analysis possibly resulting in a Type II error. A Type II error occurs when you fail to find a significant difference when in fact one did exist (Rubin & Babbie, 2001). Second, the sample was comprised primarily of lower SES African-American students, therefore these results may not generalize to other minority populations or socio-economic strata. Third, the sample was taken from a large southeastern city and the results may not be applicable to other regions of the United States. Fourth, the design was quasi-experimental allowing for many possible extraneous variables that may have affected the results of the study. One extraneous variable was the extra tutoring received by the contrast students at school one. There may have been other unknown variables. Finally, the limited amount of intervention time for the study may have contributed to both the large variance as well as lower gains scores, in the dependent measures.

### Contributions of the Current Study

Despite its limitations the current study contributes to the literature on adult-mediated reading instruction in several ways. First, this study examined an older population of remedial readers than did the majority of the previous adult-mediated reading studies.

This was the only study of those reviewed that used standardized reading measures for fourth through fifth grade populations. Second, despite a limited intervention period, the study had comparable to better effect sizes than did other adult-mediated reading studies with longer intervention periods and larger student samples. Third, this study also examined the effects of the intervention program on an identified group of special education students, which was not examined in the other adult-mediated reading instructions reviewed. Finally, the results of this study seem to support the feasibility of using minimally trained volunteers to administer reading intervention programs for students experiencing reading difficulties.

#### Future Research

In light of this study's possible contributions, there are several research questions remaining. First, the study needs to be replicated with a larger number of students for a longer intervention period. Second, due to the fact that only ten special education students were included in the sample, a study incorporating a larger number of special education students would be needed to more clearly examine the effects of this program for this population of students. Finally, a study examining the effects of the program with a higher degree of implementation for the book reading activity is needed to more fully understand the program's effect on comprehension.

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APPENDIX A  
DEMOGRAPHIC TABLES AND STUDENT SURVEYS

## Teacher Demographic Information

Variable	School 1	School 2
Number Male	0	0
Female	7	4
Caucasian	5	1
African American	2	3
Percent Masters Degree	28.0	0
Average Exp.	12.0	16.8
Avg. Exp. ( <u>SD</u> )	(8.9)	(10.2)
Avg. Courses in Reading	6.0	4.5
Avg. Course is Special Education	2.7	5.5
Avg. Class Size	21.7	19.5
Avg. number of Sp. Ed. Students	4.6	5.3
Reading Instruction Min. per day	70.0	51.3
Writing Instruction Min. per day	37.1	28.8
Oral Language Min. per day	40.7	28.8
*Whole /Small Group Instruction	4.6	5.3
*Phonics Instruction	2.3	2.5
*Error Correction (Oral Reading)	4.7	4.5
Word ID. (Semantic/Alphabetic)	2.5	2.3

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\*Likert Scale Average

## Student Demographics

Measure	Treatment	Control
Number- Male	9	11
Female	9	7
African American	18	16
Caucasian	0	2
Previously Retained	10	7
Free Lunch	18	18
Grade-3	8	10
Grade-4	6	5
Grade-5	4	3
Special Education	5	5
Mean Age	10.76	10.64
Mean Age (SD)	(1.24)	(1.11)
*Reading Level-Beginning	9/8/1	3/13/2
*Reading Level-Present	3/11/4	2/10/6
**Extra Tutoring	8/1/1/8	4/1/3/10
Sp. Ed. Minutes/weekly avg.	352	402

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\* significantly below class avg./somewhat below class avg. /at or above class avg.

\*\* none/ less than once per week/ once per week/ more than once per week

## Student Interview Form

**Student:** \_\_\_\_\_

**Teacher:** \_\_\_\_\_

Read the following to the child:

*“I’d like to know what you think about the tutoring you got from Tiger Pals. We are trying to make Tiger Pals as good as possible and would like your help in doing so. I’ve got some questions I’d like for you to answer. Please answer them as honestly as you can. This is not a test, your answers are just for me and my friends at Tiger Pals, not for your teacher.”*

Explain how the scale works and administer each item orally. Allow the child to circle the number if they choose. Explain the numbers and faces as necessary.

1. Think about the Word Study Lessons. How much did it help you become a better reader?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

2. Think about “Predict” part of the book reading. How much did it help you become a better reader?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

3. Think about the “reading” part of the book reading. How much did it help you become a better reader?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

4. Think about the “written summary” part of the book reading. How much did it help you become a better reader?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

5. Overall, how much did Tiger Pals help you become a better reader?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

6. Overall, how much did you like Tiger Pals?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

7. If you were a teacher, would you want to do Tiger Pals with your students?

---

1	2	3	4	5
Not at all		Kind of		A whole lot

### Student Rating of Tutoring Program

---

*Program Aspect	School 1	School 2
Word Study/Better Reader	5.0	5.0
Prediction/Better Reader	4.1	4.8
Book Reading/Better Reader	4.3	5.0
Written Summary/Better Reader	4.3	5.0
Overall/Better Reader	4.9	5.0
Overall Satisfaction with Program	4.9	5.0
Use Program as a Teacher	4.9	5.0

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\* Likert Scale

## APPENDIX B

### SAMPLE SCRIPTS, LESSONS, AND IMPLEMENTATION FORMS



## Tiger Pals Directions for Word Study: Gold and Purple Levels

### Activity A: Say the Sounds

The new sound(s) is/are \_\_\_\_\_.

What sound? *Student repeats sound.*

**Point to each letter or group of letters and say the sound that it usually makes.**

\*6A – Demonstrate a\_e with “bake” and “made.”

7A – Demonstrate i\_e with “hide” and “fine.” Demonstrate u\_e with “cute” and “tube.”

8A – Demonstrate o\_e with “bone” and “note.”

### Activity B: Write the word.

*Give the student an answer sheet. Do not show them the words.*

**I’m going to say some words for you to write. These words will include the sounds you just practiced. You will get two tries at each word. After the first try, I’ll circle all of the words that are correct.**

#1 \_\_\_\_\_ *Say each word one at a time. Do NOT assist student. Encourage student to make a reasonable guess if they are not sure.*

*After the student has written all of the words, circle the number in front of the correctly spelled word. Give the hint on the Word Study sheet, if there is one. Say the missed words a second time, if needed.*

### Activity C: Figure it out OR Read the groups of words.

**Now you’re going to read these words (or groups of words). If you don’t know a word, try to figure it out. Read ACROSS not down.**

### Activity D: Spell aloud and read.

**These words are not easy to figure out, so you’re going to spell them and then read them. Spelling them will help you remember the word.**

**Spell it.** *Student spells word.*

**Read it.** *Student says word.*

*Repeat for each word.*

### Activity E: Read the tricky words.

**Now you’re going to read these words. If you don’t know a word, try to figure it out. Be careful because they are tricky. We’ll practice each row until you can read it without making a mistake.**

### Activity F: Write the sentences.

*Do not show the student the words.*

**I’m going to say some sentences for you to write and then we will edit them together. Say each sentence one at a time, repeating words if needed. Do NOT assist student. Encourage student to make a reasonable guess if they are not sure.**

*After the student has written all of the sentences say: **Now proofread your work, looking for any words you may have not spelled correctly. When student is finished, say: Now I'll underline any other words you need to change. Underline the words in ink and assist student in making corrections. (i.e., providing Hints such as those used in Activity B.***

## **FEEDBACK**

**GENERAL CORRECTION PROCEDURE** (If a student doesn't answer correctly in 2-3 seconds, begin the correction procedure immediately. They will learn from watching you model and practicing the correct answers.)

1. **TELL (I)** – *tell student correct answer*
2. **ASK** –
  - a. **(WE)** *ask student to say correct answer **WITH YOU***
  - b. **(YOU)** *ask student to say correct answer **BY HIMSELF and***  
**AWARD 1 or 2**  
**POINTS**
3. **START AGAIN** – *start the line/sentence again (except during activity B: Write the word.)*

## **Tiger Pals Directions for Book Reading Activities: Gold Level**

### **Read and Think – 10 min.**

#### **Predict**

**What do you think is going to happen next?**

*Accept all reasonable responses, encouraging specific responses.*

#### ***If first day to read in a particular book:***

Read the title together and look at any pictures. Read the title of the first chapter, if there is one. Ask the student to make a prediction (“a reasonable guess”) of what they think the book is going to be about and what they think will happen first. Ask one or more of the following questions:

Who do you think is going to be in this book?

What do you think they are going to do?

What do you think might happen first?

Accept all reasonable predictions.

#### ***First prediction of the session:***

Read the previous day’s summary and ask the student to make a prediction. Accept all reasonable predictions, but encourage student to make specific predictions.

#### **Read**

**Now we’re going to take turns reading. I’ll read 2 pages and then you will read the same 2 pages. That will help you learn to read more quickly and easily. The more quickly and easily you read, the easier it is to understand what you read.**

*Tutor reads TWO pages.*

**Now it is your turn to read. You will read the same pages I just read.**

*Student reads the SAME two pages.*

#### ***Correction Procedure:***

*Stop. You missed this word. Can you figure it out?*

*If student responds correctly within 4 seconds, say: Good. Read the sentence again.*

*If the student does NOT, say: That word is \_\_\_\_\_. What word? (student repeats word) Good. Read the sentence again.*

#### **Summarize (orally)**

**Name the who or what.** (*Who or what do you think that page was mostly about?*)

*Student answers. Assist student as needed, asking the student to list characters and discuss who was most important.*

**Tell the most important thing about the who or what.** (*Who/ what do you think that page was mostly about?*)

**Summarize the page in 10 words or less.**

**Sum it Up – 5 min.**

*Accept reasonable responses to each question and assist as needed. Be sure to require that the student says his main idea statement aloud BEFORE he begins to write on the answer sheet.*

Of all the people in the story today, who do you think was most important?

**What do you think was the most important thing they did or the most important thing that happened to them?**

**Tell me a sentence (about 10 words or less) that tells the main idea of what we read today.**

## **Tiger Pals Directions for Book Reading Activities: Purple Level \***

\*Chapter books should be read at this level.

### **A. Read and Think – 10 min.**

#### **Step One: Predict**

**What do you think is going to happen next?**

*Accept all reasonable responses, encouraging specific responses and modeling as needed.*

*Encourage students to use one or more of the following in making predictions: book title, chapter title, pictures, previous day's summary, and any other information they remember about what happened the last time they read.*

#### **Step Two: Read**

**Now you'll read two pages. Your prediction was reasonable, but now let's see if it happens.**

*Student reads two pages.*

*Correction Procedure:*

*Stop. You missed this word. Can you figure it out?*

*If student responds correctly within 4 seconds, say: Good. Read the sentence again.*

*If the student does NOT, say: That word is \_\_\_\_\_. What word? (student repeats word) Good. Read the sentence again.*

#### **Step Three: Check Prediction and Summarize (orally)**

**Did your prediction happen?** *(Remind students that a prediction doesn't have to be correct to be a good prediction.)*

**Summarize what happened on these two pages in 10 words or less.**

*Student should include the following in their summary. Remind them of these directions (same as Gold level), if needed.*

**Name the who or what.** *(Who or what do you think that page was mostly about?)*

**Tell the most important thing about the who or what.** *(Who/ what do you think that page was mostly about?)*

*Repeat these 3 steps for at least 10 minutes.*

### **B. Sum it Up – 3 min.**

**Now let's sum up everything you read today. Tell me a sentence (about 10 words or less) that tells the main idea.**

*Be sure to require that the student says his main idea statement aloud BEFORE he begins to write on the answer sheet. Assist and model as needed using the same questions as before (who is most important and what was the most important thing they did or the most important thing that happened to them).*

**Write the sentence on the answer sheet.**

### **C. Practice a Page – 3 min.**

**Now we're going to choose a page to practice. This will help you become a more fluent reader. that means you will read faster and with more expression.** *(With student, choose one full page from what he/she read today.)*

**You'll read for one minute and then we'll count the number of words you read correctly. Read quickly, but don't rush and be sure to read with expression. If you do not know a word, you can just skip it. Begin.** *(Point to the first word of the first complete paragraph on the page. If the student hesitates on a word for 4 seconds, say "Go on.") After one minute, say, "Stop."*

**Now, we'll do that again and see if you read more words the second time.**

**Remember to read quickly, but do not rush. Begin.** *(Point to the first word of the first complete paragraph on the page. If the student hesitates on a word for 4 seconds, say "Go on.") After one minute, say, "Stop."*

## Tiger Pals Word Study Placement Test

Student's Name: \_\_\_\_\_

Tutor/Examiner Name: \_\_\_\_\_

Teacher: \_\_\_\_\_ Grade: \_\_\_\_\_

Date: \_\_\_\_\_ # of words MISSED \_\_\_\_\_ Begin on Word Study # \_\_\_\_\_

**Directions: I'm going to show you some words. They are not real words. Just tell me how they sound. Take your time and try to read every word. Use your finger so I can keep up.**

*The first time a student skips a word without an obvious attempt to figure the word out, point to the skipped word and say: **Remember to try to figure out every word. If you can't figure it out, that's okay. Just skip it. Be sure to do your best.***

*If a student is not pointing to the words, say: **Remember to point to each word as you read it so I know which word you are reading. If they still do not point, point to the words for them.***

*If a student remains on one word for 10 seconds, point to the next word and say: **Go on to the next word.***

Ceiling: Discontinue testing if the student misses 5 in a row.  
(Put a slash (/) over any word missed.)

- A. fap                      \*Begin on Word Study # 1 if miss 2 or more words.
- B. fam                      \*Begin on Word Study #6 if miss 0-1 words.
- C. fip
- D. fim
- E. fom
- F. fop
- G. mep
- H. fet
- I. nup
- J. fum

Tutor \_\_\_\_\_ Student \_\_\_\_\_ Date \_\_\_\_\_

\_\_\_\_\_ **Word Study #** \_\_\_\_\_

B. Write the word.

F. Write the sentences.

1. \_\_\_\_\_ 1. \_\_\_\_\_

2. \_\_\_\_\_ 2. \_\_\_\_\_

3. \_\_\_\_\_ 3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

**Read and Think**

Book Title \_\_\_\_\_ Pages Read \_\_\_\_\_

Summary

\_\_\_\_\_



## Word Study Gold 11A


### A. Say the sounds.

u sh


u ing th i e sh o a u e  1 point!

### B. Write the word.

Tutor: say each word in a sentence.

1. luck 2. shelf 3. brush 4. hung 5. fresh 6. hunt  1 point!

### C. Figure it out.

shut press still hunt hut spell wish  1 point!

### D. Spell aloud and then read.


\*note: The student should spell each word (looking at the letters as he spells) and then say each word.

through would ever

even through would through could ever  1 point!

### E. Read the tricky words.

swam could what shell hug well step  1 point!

where swim ever who through hung skill  1 point!

would many shut shelf sell dress any  1 point!

stop press slip were brush their there  1 point!

smell will even still very ship fresh  1 point!


### F. Write the sentences.

Jim and Jan fish in the pond. 1 point!

Jill and Dan pick up shells. 1 point!


## Word Study Gold 11B

### A. Say the sounds.


u a sh e i u ing th e o  1 point!

### B. Write the word.

\*note: Do not show student the words. Use answer sheet provided. Tutor: say each word in a sentence.

1. skunk 2. will 3. step 4. well 5. swim 6. junk  1 point!

### C. Figure it out.

shell shut crust fresh skill junk slip  1 point!

### D. Spell aloud and then read.

\*note: The student should spell each word (looking at the letters as he spells) and then say each word.

through even would ever through could  1 point!


### E. Read the tricky words.

very skunk stamp even skill junk will  1 point!

luck dress trash were well where ever  1 point!

who crash many sack fresh could press  1 point!

flash would print there just through snack  1 point!

any plant junk what stamp their lick  1 point!


### F. Write the sentences.

Will Jim and Jan have fish for a snack? 1 point!

Jill and Dan fill a sack with shells. 1 point!


## Word Study Gold 11C

### A. Say the sounds.


u a ing sh e i th a sh o  1 point!

### B. Write the word.

\*note: Do not show student the words. Use answer sheet provided. Tutor: say each word in a sentence.

1. luck 2. skunk 3. will 4. shelf 5. swim 6. shop  1 point!

### C. Figure it out.

shell press crust hunt skill spell slip  1 point!

### D. Spell aloud and then read.

\*note: The student should spell each word (looking at the letters as he spells) and then say each word.


would even through ever could would  1 point!


### E. Read the tricky words.

very even stamp skunk skill could will  1 point!

swam many would plant hug well step  1 point!

lunch dress trash were junk where ever  1 point!

what their shut shelf sell dress any  1 point!

any lick junk well stamp what shell  1 point!

### F. Write the sentences.

Jim and Jan snack on fresh fish. 1 point!

Jill and Dan slip and spill the shells. 1 point!

Word Study Purple 17A

**A. Say the sounds.**

er ir ur

or oa er e a u ir ar o ur



1 point!

**B. Write the word.**

Tutor: say each word in a sentence.

1. her 2. fern 3. bird 4. first 5. burn 6. fur



1 point!

**C. Read the groups of words.**

brave braver wave waved  
fill filling win winner  
hit hitter tape taped  
joke joked run runner



1 point!

**D. Spell aloud and then read.**

against system brought

since against once system again around brought



1 point!

**E. Read the tricky words.**

beep steam fist star burn brought bun



1 point!

first these , hard against her want far



1 point!

had system barn fern shirt again boast



1 point!

thought short those sheep through born fur



1 point!

ever farm for went float clean stir



1 point!

**F. Write the sentences.**

The smart girl was first in line. 1 point!

The bird sits on his arm and chirps. 1 point!

The church was three miles from the farm. 1 point!

## Word Study Purple 17B

### A. Say the sounds.

e ee a ur or o er ar ir oa



2 points!

### B. Write the word.

Tutor: say each word in a sentence.

1. stern 2. faster 3. twirl 4. shirt 5. hurt 6. turn



1 point!

### C. Read the groups of words.

tape	taping	snap	snapped
big	bigger	hope	hoping
stop	stopping	late	later
tap	tapping	hope	hoped



1 point!

### D. Spell aloud and then read.

went system again what against brought enough



1 point!

### E. Read the tricky words.

sneak system turn shirt cute since stern



1 point!

cut ever faster stir against hurt sweet



1 point!

fern dark again through hut every drive



1 point!

west star her once burn first wait



1 point!

drove brought want fish stay thought storm



1 point!


### F. Write the sentences.

The shark swam in the cold, dark sea. 1 point!

He swam through a huge storm. 1 point!

## Word Study Purple 17C

### A. Say the sounds.

ar er ea i ir ai e ur a or  1 point!


### B. Write the word.

Tutor: say each word in a sentence.

1. hunter 2. faster 3. chirp 4. third 5. church 6. curl  1 point!

### C. Read the groups of words.

bat	batter	snap	snapping
tap	tapped	close	closer
file	filing	tape	taping
tape	taped	wave	waving

 1 point!


### D. Spell aloud and then read.

should system brought against these again those  1 point!


### E. Read the tricky words.

through sneak hunter soap against church course  1 point!

sport twirl again curl chirp thought her  1 point!

chip always faster third system start enough  1 point!

brought snake froze away short fern twist  1 point!

broke shot around might snack charm those  1 point!

### F. Write the sentences.

You should park the car where it will be safe. 1 point!

She sold the sports car for a lot of cash. 1 point!

## Lesson Implementation with Book Reading Activity

Date \_\_\_\_\_

Time: \_\_\_\_\_ to \_\_\_\_\_

Tutor \_\_\_\_\_

Observer \_\_\_\_\_

Student \_\_\_\_\_

School/ Class \_\_\_\_\_

Lesson # \_\_\_\_\_

Book (series, #, title) \_\_\_\_\_

**Totals:** \_\_\_\_\_ TOTAL points (total number of ones)

\_\_\_\_\_ TOTAL possible points (59- n/a)

\_\_\_\_\_ % of implementation

### Scoring:

n/a – if behavior is not appropriate (ex. no corrective feedback because no errors were made)

1 – if behavior occurs 0 – if behavior does not occur

### Error Tally:

Count all mistakes as errors unless child spontaneously self-corrects. In other words, if the tutor indicates that the child

made an error and then the child corrects the error, it is counted as an error.

## Word Study

### Activity 1: Say the Sounds

#### Error Tally

- \_\_\_\_\_ 1. Tutor reminds students of directions, if needed.
- \_\_\_\_\_ 2. Tutor correctly models all new sounds
- \_\_\_\_\_ 3. Student correctly enunciates the sound
- \_\_\_\_\_ 4. Tutor (or child) points to each sound.
  
- \_\_\_\_\_ 5. Tutor provides corrective feedback for errors
- \_\_\_\_\_ 6. Tutor has student stop and repeat the line when an error occurs.
- \_\_\_\_\_ 7. Points are awarded at the end of this activity.

Comments:

### Activity 2: Write the Word

- \_\_\_\_\_ 1. Tutor reminds student of directions, if needed.
- \_\_\_\_\_ 2. Tutor has student write all the words from the lesson
- \_\_\_\_\_ 3. Tutor provides corrective feedback for errors.
  
- \_\_\_\_\_ 4. Tutor does not proceed until all words are correctly spelled at a time.
- \_\_\_\_\_ 5. Points are awarded at the end of this activity.

Comments:

### Activities 3 & 5: Figure it out-Read the group of words

- \_\_\_\_\_ 1. \_\_\_\_\_ Tutor reminds student of directions
- \_\_\_\_\_ 2. \_\_\_\_\_ Tutor has student read all words from the lesson
- \_\_\_\_\_ 3. \_\_\_\_\_ Tutor provides corrective feedback for errors
- \_\_\_\_\_ 4. \_\_\_\_\_ Tutor has student stop and repeat the line when an error occurs, before proceeding to the next line.

- \_\_\_\_\_ 5. \_\_\_\_\_ Tutor does not proceed until all words are correctly pronounced
- \_\_\_\_\_ 6. \_\_\_\_\_ Points are awarded at the end of this activity

#### **Activity 4: Spell Aloud and Read**

- \_\_\_\_\_ 1. Tutor reminds student of directions
- \_\_\_\_\_ 2. Tutor has student spell and read each word
- \_\_\_\_\_ 3. Tutor provides corrective feedback for errors, before proceeding to the next word.
- \_\_\_\_\_ 4. Tutor does not proceed until all words are correctly spelled and pronounced
- \_\_\_\_\_ 5. Points are awarded at the end of this activity

#### **Activity 6: Write the sentences**

- \_\_\_\_\_ 1. Tutor reminds student of directions
- \_\_\_\_\_ 2. Tutor reads each sentence slowly and clearly
- \_\_\_\_\_ 3. Tutor has student write each word in the sentence
- \_\_\_\_\_ 4. Tutor provides corrective feedback
- \_\_\_\_\_ 5. Tutor does not proceed until all spelling and punctuation is correct
- \_\_\_\_\_ 6. Points are awarded at the end of this activity

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### **Book Reading Activities**

#### **Activity 1: Predict**

- \_\_\_\_\_ 1. Tutor asks student “who do you think is going to be in this book”, or if continuing, reviews previous reading
- \_\_\_\_\_ 2. Tutor asks student “what do you think they are going to do?”
- \_\_\_\_\_ 3. Tutor asks student “what do you think might happen first?”
- \_\_\_\_\_ 4. Tutor accepts all reasonable answers
- \_\_\_\_\_ 5. Points are awarded at the end of this activity

#### **Activity 2: Read**

- \_\_\_\_\_ 1. Tutor reads title to student.
- \_\_\_\_\_ 2. Tutor reads pages first then has the student read the same pages. (gold section only)
- \_\_\_\_\_ 3. Tutor or student points to the words in the story as the child reads.(if needed)
- \_\_\_\_\_ 4. When a student misses a word, the tutor prompts the student to figure out the word, or provides the \_\_\_\_\_ word after four seconds if the child still cannot figure it out.
- \_\_\_\_\_ 5. Tutor has student identify the who and what of every page and the most important thing about the who and what.
- \_\_\_\_\_ 6. Tutor has student repeat the sentence if an error occurs. (unless child self-corrects)
- \_\_\_\_\_ 7. Points are awarded at the end of this activity

#### **Activity 3: Written Response and Summary**

- \_\_\_\_\_ 1. Tutor prompts student to summarize each page in ten words or less



- \_\_\_\_\_ 2. Tutor has student identify the most important character(s) of the story.
- \_\_\_\_\_ 3. Tutor has student identify the most important thing that happened to the main characters
- \_\_\_\_\_ 4. Tutor has student write a sentence of ten words or less about the main idea of the story
- \_\_\_\_\_ 5. Points are awarded for this activity

**Activity 4: Pick a Page**

- \_\_\_\_\_ 1. Student reads same text for 2 one-minute timed readings.
- \_\_\_\_\_ 2. Points are awarded at the end of this activity

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**General**

- \_\_\_\_\_ 1. Tutor praises the student verbally throughout the lesson, at least 1-3 times.
- \_\_\_\_\_ 2. Tutor encourages the student through nonverbal means (smiling, pat shoulder, etc.) as needed
- \_\_\_\_\_ 3. Sounds and Words part of lesson is fast-paced.
- \_\_\_\_\_ 4. Sounds and Words lesson is appropriate -- should have very few (<4 errors).
- \_\_\_\_\_ 5. Book for Book Reading Activity is appropriate, student should make very few errors – approximately 90% accuracy.

Comments:

## Tiger Pals Record of Lessons

Student \_\_\_\_\_ Grade \_\_\_\_\_ Teacher \_\_\_\_\_

Date	Tutor	Time (total minutes)	Lesson Sheets Completed (Game Sheets OR Word Study)	Book Read/ Pages Read	Comments

APPENDIX C  
CONSENT AND ASSENT LETTERS

12-01

Dear Parent:

I am writing this letter to ask your permission for your child to participate in a research project for Louisiana State University. The goal of the project is to learn about the most effective ways to help students learn to read. Your child's classroom teacher and I agree that participation would help your child. The title of the project is Adult Mediated Instruction for Grades 3 to 5.

If your child participates he/she will spend about 30 minutes being tested in the month of January. Then, every other week, he/she will spend about 5 minutes being tested. Your child will be tested again for another 30 minutes in May. This will help your child's teacher as she teaches your child to read.

Also, your child will be tutored by a volunteer for 30-45 minutes, 3 or 4 times per week for about 13 weeks, excluding school holidays, and state testing. We will carefully select a time that will not cause your child to miss important instruction by the teacher. This instruction will help your child improve his or her reading.

At any time, you can decide that you do not want your child to participate anymore. Just let the child's teacher know. Information about your child will be given only to your child's teacher. Reports about our results will not include the names of any students or teachers.

If you have any questions, please call me at 936-4207, Dr. Jill Allor at 578-1264 or call your child's teacher. If it is okay with you that your child participate in this project, please sign and return this page to your child's teacher.

Sincerely,

Randy P. Lachney  
Doctoral Candidate

Sincerely,

Jill Allor  
Assistant Professor

I have been fully informed of the above-described procedures with its possible benefits. I give my permission for the participation of my child, \_\_\_\_\_ in the study.

I understand that I may withdraw my child at any time.

\_\_\_\_\_  
Parent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent Name (please print)

12-01

Dear Parent:

I am writing this letter to ask your permission for your child to participate in a research project for Louisiana State University. The goal of the project is to learn about the most effective ways to help students learn to read. Your child's classroom teacher and I agree that participation would help your child. The title of the project is Adult Mediated Instruction for Grades 3 to 5.

If your child participates he/she will spend about 30 minutes being tested in the month of January. Then every other week, he/she will spend about 5 minutes being tested. In May your child will be tested for another thirty minutes. We will carefully select a time that will not cause your child to miss important instruction by the teacher.

The information obtained from these tests will help your child's teacher do a better job at teaching reading to your child. Also, your child will receive some additional school supplies like paper, pencils and notebooks for their participation.

At any time, you can decide that you do not want your child to participate anymore. Just let the child's teacher know. Information about your child will be given only to your child's teacher. Reports about our results will not include the names of any students or teachers.

If you have any questions, please call me at 936-4207, Dr. Jill Allor at 578-1264 or call your child's teacher. If it is okay with you that your child participate in this project, please sign and return this page to your child's teacher.

Sincerely,

Sincerely,

Randy P. Lachney  
Doctoral Candidate

Jill Allor  
Assistant Professor

I have been fully informed of the above-described procedures with its possible benefits. I give my permission for the participation of my child, \_\_\_\_\_ in the study.

I understand that I may withdraw my child at any time.

\_\_\_\_\_  
Parent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent Name (please print)

12-2001

Child Assent:

Examiner says the following

I work at LSU. You probably know LSU for its football team. At LSU we do a lot more than just football. We also help teachers learn better ways to help children read.

I would like your help with a special project that I am working on. Some of my friends and I will come to your school and do some tests with you in January and again in May, These tests will take you about 30 minutes. Do you have any questions about what we will be doing?

If you agree to help me, you can stop being in the program at any time if you change your mind about it.

Now that I've told you about this special project, do you think this is something that you would like to do with us? Remember if you change your mind at any time, you do not have to keep working with us. You just need to tell us, your teacher, or your mom and dad. If you would like to work with us please sign your name below.

---

Student's Name (please print)

---

Signature

12-2001

Child Assent:

Examiner says the following

I work at LSU. You probably know LSU for its football team. At LSU we do a lot more than just football. We also help teachers learn better ways to help children read.

I would like your help with a special project that I am working on. Some of my friends and I will come to your school and work with you, and together we will play some reading games, read some stories and do some writing on some of these stories. Do you have any questions about what we will be doing?

If you agree to help me, you can stop being in the program at any time if you change your mind about it.

Now that I've told you about this special project, do you think this is something that you would like to do with us? Remember if you change your mind at any time, you do not have to keep working with us? If you do want to work with us please sign your name below.

---

Student's Name (please print)

---

Signature

December 4, 2001

Dear Teacher:

We are writing this letter to ask for your consent to participate in a research project for Louisiana State University. The purpose of the project is to learn about effective ways to help students learn to read. The title of the project is Adult Medicated Instruction for Remedial Readers.

We are very excited about the project and believe you will find it beneficial to both you and your students. As a classroom teacher, we would ask you to do the following:

1. Assist us in obtaining parental permission for approximately 6 students from your class and allow further assessment of these students at a time convenient for you. This assessment will require approximately 30 minutes in January and 30 minutes in May.
2. Allow approximately half of these students (randomly selected) to be provided individual assistance by a tutor selected and trained by our staff. Instruction would take place for approximately 35-45 minutes, 3-4 times per week for approximately 15 weeks.
3. Complete paperwork, including demographic information about you and your students, as well as information about your teaching methods.

If you choose to participate, you will be free to withdraw from the project at any time. If you have any questions at this time or in the future, please do not hesitate to call me at 936-4207 or Dr. Allor at 578-1264. If you agree to participate please sign on the next page.

Sincerely,

Sincerely,

Randy P. Lachney,  
Doctoral Candidate

Jill Allor,  
Assistant Professor

I, \_\_\_\_\_, agree to participate in the project as outlined above. I understand that I may withdraw from the project at any time.

\_\_\_\_\_  
Signed

\_\_\_\_\_  
Date



## VITA

Randy Paul Lachney was born in Pineville, Louisiana, and grew up in and around the Central Louisiana area. He received a bachelor of general studies in general studies from Louisiana State University in August 1992. He received a bachelor of science in psychology from Louisiana State University in December 1994. He then received a Masters of Arts degree in curriculum and instruction with a minor in psychology from Louisiana State University in May 1996.

Randy then entered the doctoral program in curriculum and instruction with emphasis in special education in June 1996. While enrolled in the doctoral program, Randy received K-12 mild/moderate certification in August 1997 and proceeded to teach three years of special education at the elementary, middle, and high school levels. He has taught students with learning disabilities, behavior disorders and mild/moderate mental retardation. Randy's research interests include remedial reading and math interventions for both special education and at-risk students. Randy is also knowledgeable in applied behavior analysis and direct instruction. His educational experiences include teaching four semesters of introduction to special education, co-teaching applied behavior analysis for teachers, and being accepted for a national presentation at the Council of Learning Disabilities National Conference in Denver, Colorado in October 2002. He is also currently working on submitting two manuscripts for publication. Randy will receive the degree of Doctor of Philosophy in curriculum and instruction in August 2002.