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## The Implementation of Reading Interventions in a Community Setting

Kimberly H. Bell  
*University of Nebraska at Omaha*

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THE IMPLEMENTATION OF READING INTERVENTIONS  
IN A COMMUNITY SETTING

An Ed. S. Field Project

Presented to the

Department of School Psychology

and the

Faculty of the Graduate College

University of Nebraska

In Partial Fulfillment

of the Requirements for the Degree

Educational Specialist

University of Nebraska at Omaha

by

Kimberly H. Bell

March 16, 2005

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ED. S. FIELD PROJECT ACCEPTANCE

Acceptance for the faculty of the Graduate College,  
University of Nebraska, in partial fulfillment of the  
Requirements for the degree Educational Specialist,  
University of Nebraska at Omaha

Committee

Carey S Ryan 3-30-05

Kristen Swain 3-30-05

J. C. A. 3-31-05

Chairperson Robt Zientz, Woody  
Date March 30, 2005

## Abstract

This study examined the effects on reading skills of phonological awareness and analogy-based interventions that were provided in a community setting. Children were assigned randomly to one of the two conditions. In the phonological awareness condition, children were taught to connect the sounds of speech with alphabet letters. In the analogy-based condition, children were taught to use familiar words to decode unfamiliar words. The results revealed significant overall improvement on three measures of reading skills. However, this improvement did not depend on whether the children received the analogy-based or phonological awareness intervention. The implications of this research for developing effective reading interventions in collaboration with community organizations are discussed.

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## The Implementation of Reading Interventions in a Community Setting

Without the ability to read, our lives would be devoid of the rich information available in books, newspapers, and other materials. Indeed, teaching children to read is a primary focus of elementary education. Yet, approximately a quarter of all U.S. students have insufficient reading skills (National Assessment of Educational Progress, 2000). Many students are thus likely missing out on vital life information as well as the simple enjoyment of reading.

The most often recommended methods for helping children who have reading problems involve some form of individualized instruction. For example, a method known as “repeated readings” involves having a child read a passage aloud several times in succession. As the child reads, he or she is given corrective feedback. Another method known as “listening passage preview” involves the child following along while the instructor reads a passage aloud. The instructor models accurate responses to unknown words and reinforces correct responses. In both methods, words are taught in the context of meaningful passages (vs. in isolation). Such approaches have been shown to improve reading skills (Daly & Martens, 1994; Levy, Nicholls, & Kohen, 1993). Unfortunately, however, in many urban school settings, limited budgets and personnel make it difficult to provide these types of individualized instruction. Educators must therefore develop more creative ways to meet the educational needs of children who have reading problems.



One possibility is to provide more intensive instruction in community settings outside of the formal classroom. Community organizations, such as Boys & Girls Clubs, Ruth Solomon Girls Club, The Hope Center, Campfire U.S.A, and Girls Incorporated, often provide opportune times and contexts for such interventions. These organizations often have access to parents, volunteers, high school students, and school personnel who could be trained to assist children with reading difficulties. Many of these programs also have appropriate staff-student ratios, are staffed by people familiar with the academic content, and have opportunities for small group work (Forum for Youth Investment, 2003). The staff of such programs may also already have in place mechanisms for communicating their program content to schools. In addition to utilizing existing resources, such interventions provide professional development opportunities for staff.

The purpose of the present research was to explore the value of providing two types of reading instruction, namely, an analogy-based approach and phonological awareness, to children with reading disabilities who were participating in a community-based after-school program. The program provided educational programming in reading, math, science, health and safety, career exploration, and life skills, as well as other services (e.g., tutoring, transportation, and dinner) to girls between 6 and 18 years of age. Children who received the analogy-based reading instruction learned a certain number of words, and then used those words to decode unknown words with similar spelling. The

intervention also incorporated rhyming activities in which the children learned to connect spelling patterns with other words (Goswami, 1988). Children who received the phonological awareness instruction were taught how to relate spoken language to alphabet letters through the use of rhyming, sound blending and segmenting, spelling, and reading activities (Torgeson, Morgan, & Davis, 1992).

#### *Reading Interventions in Community Settings: Previous Research*

Children spend approximately 30 percent of their time in school, and about 40 percent in leisure activities (Carnegie Council of Adolescent Development, 1992). Active forms of leisure promote development more than passive forms do. For example, children who spend time reading for pleasure perform better on cognitive measures, while time spent watching television does not appear to correlate positively with achievement (Hofferth & Sandberg, 2001). After-school programs may thus be best positioned to make a difference in young people's lives outside of family and school.

The benefits of high quality reading interventions in these settings may be most evident in the summer. Allinder and Eicher (1994) found that during a long school break students tend to lose some academic skills, which may result in spending school time on relearning skills. Cornelius and Semmel (1982) also found that students who did not participate in a five-week summer reading program experienced a weakening (although not a loss) of their reading skills. It

thus seems appropriate that children receive opportunities to practice their reading skills in different settings in order to preserve or improve them.

Some research suggests that such opportunities can be effectively provided by nonprofessionals in community-based nonacademic settings. For example, Vadasy, Jenkins, Antil, Wayne, and O'Conner (1997) found that reading interventions could be carried out by nonprofessional tutors in a community-tutoring program for first grade children at risk for reading difficulties. Tutors included parents, grandparents, community college students, and high school students. These researchers showed that the children participating in their phonologically-based instruction program made significant gains in spelling and nonword reading.

Building Educated Leaders for Life (BELL, 2003) is another example of a successful academic enrichment program. The program, which is based in Boston, New York City, and Washington, D. C., is geared towards kindergarten through sixth grade students from low-income households. The lead teachers are certified and are responsible for setting goals for the participants, writing lesson plans, and evaluating student progress. Instruction is provided by tutors who are juniors or seniors in high school or at least 17 years old. Although the average BELL participant is 1.2 years behind grade level in math, reading, and writing skills, 86 percent of the children in the 2002 28-week after-school program were performing at proficiency and advanced levels in reading. During the 2000-2003 period, participants in BELL's six-week summer program improved by four

months in the areas of reading, writing, and math. The three months of summer learning loss was thus reversed.

Although the research is not extensive, it suggests that reading interventions can be effectively provided to children in need of academic assistance in community settings other than schools. Of course, the content of the program and the type of intervention also determine the effectiveness of the program. The question of whether the effectiveness of such interventions differs depending on whether the intervention is based on analogy or phonological awareness is particularly relevant.

#### *Analogy-Based Approach*

Automatically decoding is important for reading success. In analogy-based approaches, children are trained to decode unknown words using words or word parts that they know. For example, children can decode the word “dependable” by first developing the ability to read the words “he,” “send,” and “table” and then comparing and contrasting the word parts in the unknown word (Stahl & Duffy-Hester, 1998). The children are trained to use their knowledge of the previously learned words, break the unknown word into word parts, make comparisons with the unknown words, and then decode the word using what was previously learned.

In analogy-based approaches, children learn a set of 90 to 120 key words with common spelling patterns. The children gradually learn approximately five to six words a week. They then practice comparing unfamiliar words with the

learned words. The children also practice creating rhyming words to enhance their phonetic awareness (O'Shaughnessy & Swanson, 2000). Rhyming helps children categorize the words based on sound. Analogies help children categorize the words according to spelling and sound patterns (Goswami, 1988).

Goswami (1988) demonstrated that children as young as six years old are able to use analogies. Goswami verbally presented clue words to children who were then asked to read words that varied in similarity to the clue word. The clue word and test word were analogous at the beginning, the end, or not similar at all. The three types of test words were analogous (same beginning and end letters of the clue word), common letter (similar three letters, but not in the same sequence as the clue word), and control words (clue words from another trial). It was found that more analogous words were read in the beginning and end conditions. The effect of end letters supports the importance of including rhyming skills and common spelling patterns.

In a second experiment, Goswami (1988) demonstrated that six- and seven-year-old children were able to make analogies when taught pairs of words that were consistent in spelling and sound. In his third experiment, Goswami examined children's decoding in text. The words used in the previous experiments were placed into short stories. The children were either in a condition where analogies could be formed with a word in the title (which was read to the child), or a condition in which analogies could not be made to the title. If context were a factor in reading, there would be significantly better

performance in the condition without a title. The results indicated that analogies could be applied to new words in a story.

In a later study, Goswami (1993) used a cross-sectional design and demonstrated that seven-year-old children used their phonological knowledge of initial consonants (onset) and the vowels and last consonants (rime) to recognize orthographic units when learning to read. He called this the interactive analogy model. When the model was tested, he found that the rimes transferred to new words with the same grapheme cluster. For example, from the word *bug*, *-ug* should transfer to learning to the word *rug*, but not the vowel grapheme, as in *cup*. In the second experiment, children who were, on average, five months ahead of the children in Experiment 1 exhibited transfer of vowel graphemes and onset-vowel units to new words. As an example, *beak* transferred to *heap* and *bean*, *-bea* (onset-vowel), and *-ea-* (vowel grapheme). In Experiment 3, children who had more advanced reading skills made more similar transfer patterns as compared with the children in Experiment 2, except that vowel graphemes did not transfer. For example, *swing* did not transfer to *grin* or *dip*, which seems logical because larger grapheme clusters would have more transfer. Goswami reasoned that children may find it difficult to make analogies in readings based on single graphemes where deficits in phonological underpinnings may be present.

Analogy-based decoding has also been examined in children with dyslexia. Manis, Szeszulski, Howell, and Horn (1986) concluded that 10 to 13

year-old children with dyslexia differed from children with typical reading abilities in the way that they decoded printed words. The children in both groups were shown 18 nonwords and asked to pronounce them. Following this, the children were shown real words and asked to pronounce them. The researchers recorded whether the child made an analogy-based or rule-based response. An analogy-based response would be pronouncing words that are visually similar. A rule-based response would be pronouncing a word according to “rules” of letters and spelling formations. For example, children were shown the nonword “sugan” and then the real analogy word, which is sugar. The analogy response would be /shugan/ and the rule-based response is /sugan/.

Manis et al. (1986) found that children with dyslexia were behind their age-matched peers with typical reading abilities on both strategies. Children with dyslexia and age-matched peers matched on reading levels also were delayed on analogy-based responses, but not rule-based responses. When the decoding errors were examined, typical readers noticed and made more analogies to real words from unknown words than did the children with dyslexia. Also, the children with dyslexia and typical readers did not differ in the number of rule-based responses. Another interesting finding was that when the analogy word was repeated, children in both groups provided analogy responses to the unknown word. This finding supports the conclusion that analogy responses can be accessed in memory for both groups, although less often in children with dyslexia. Manis et al. thus demonstrated that children with dyslexia are able to

apply analogy-based approaches to words, but are less likely to make analogies to real words from nonsense words.

Researchers and educators have found analogy-based strategies to be useful in reading programs. In particular, the Benchmark School for first through eighth graders is known for using analogy-based strategies in its reading program (Gaskins et al., 1992). This pilot program was based on the following standards: (a) decode unknown words using known words; (b) achieve automaticity in word recognition, and test for meaning by using context; (c) group words into roots, affixes, syllables, and phonograms; and (d) practice flexibility in accepting various possibilities of words and approximations. An evaluation of the second year of the program found that the children did not significantly increase their reading achievement test scores. However, students whose teachers consistently followed the program performed better on the reading tests than did students whose teachers did not. The program thus appeared to provide some benefit. Nevertheless, Gaskins et al. (1992) suggest that phonological information and other decoding strategies should also be taught to children.

### *Phonological Awareness*

Phonological awareness is defined as an awareness of the sound structure of the words in their language (Cupples & Iacono, 2000). The goal of an intervention that uses phonological awareness is to improve the link between sounds of speech and alphabet letters. In contrast to the analogy-based approach, children learn to connect sounds according to spelling patterns.



Phonological awareness activities include rhyming, as well as sound blending, sound segmenting, spelling, and reading.

Torgeson et al. (1992) examined the effects of incorporating segmenting and blending into reading interventions. They gave one group of kindergarten children phonological training on both phoneme segmentation (analysis) and sound blending (synthesis) to make a real word. A second group of children received only the sound blending training. The children receiving both types of training were taught to recognize the beginning, middle, and end sounds in words. They then separately pronounced all sounds in a word, and pronounced the entire word after hearing the phoneme parts in order. In the blending only group, children were given separated phonemes of a word and asked to pronounce the word. While the words were pronounced in phonemic segmentation, the children were presented two or three pictures, and asked to choose which picture the trainer pronounced. The use of the pictures was later faded from the activity. The group that was taught both phoneme segmentation and sound blending demonstrated improvement on both types of reading skills as well as an ability to read new words. The children in the blending group only improved their blending skills, but were less able to read new words than a control group of children who participated in other activities, such as listening to stories, dramatizations, and discussions.

Phonological awareness has been examined in various populations of children. Using longitudinal and cross-sectional designs, Cupples and Iacono

(2000) found significant relationships between phonological awareness and early oral reading abilities in children with Down's syndrome. The children initially completed tests of phonological awareness, oral reading, cognitive functioning, and receptive language. They also completed subtests from the Woodcock Reading Mastery Tests-Revised, Word Identification and Word Attack (Woodcock, 1987). Phonological awareness was also assessed by the following tasks: rhyme, alliteration, phoneme segmentation, counting of real and nonwords, and nonlinguistic counting (if the child had problems with phoneme counting). Nine months later, the children were reassessed on the same measures. The results indicated that better oral reading and phonological awareness were positively related in children with Down's syndrome. Also, the second assessment revealed that children with better oral reading were more skilled at word segmentation of words and nonwords. Therefore, it seems that children of Down's syndrome learn to read with phonological awareness.

Schneider, Roth, and Ennemoser (2000) provided further evidence relevant to phonological awareness training. Kindergartners were placed in one of the three treatment groups. The kindergarten children were classified as "at-risk for dyslexia" according to scores on the Bielefeld screening test, produced by Jansen, Manhaupt, Marx, and Skowronek (as cited in Schnieder et al., 2000). The treatment conditions included the following: (a) phonological awareness training (games with rhyme identification, spoken sentences, syllable segmentation and analysis, identification of phonemes at the beginning of words,

and later moving to more complex words); (b) letter-sound training (listening to “letter sound stories,” producing sounds, seeing letters in print, and connecting sounds at the beginning of a words with letters on alphabet cards); and (c) combined phonological awareness and letter-sound training. When these children were assessed in Grades 1 and 2, the children in the combined group improved in both reading areas. In addition, the children in the letter-sound training condition did not perform as well as the phonological awareness condition.

Lovett, Warren-Chaplin, Ransby, and Borden (1990) demonstrated a drawback of phonological awareness training, that is, that children may have problems transferring these skills to unknown words. Children with severe reading difficulties were placed in one of three treatment conditions. In one condition, children were taught regular vocabulary words by whole word methods. In the second condition, children worked with grapheme-phoneme connections, which involved letter-sound correspondence. In the third condition, children received study skills training. The children in all three conditions received a total of 35 hours of training. Participants in the study skills condition improved on specifically instructed and uninstructed material, which emphasized the trainability of life skills, organizational strategies, academic problem-solving, and study strategies in children with reading difficulties. The results were also encouraging in that the children in both the whole word and letter-sound correspondence groups more than doubled the number of regular and

exceptional words that they could identify. However, neither treatment condition generalized to uninstructed reading vocabulary, rhymes, or pseudo-words.

In response to these findings, Lovett et al. (1994) examined the transfer of two reading interventions in children with dyslexia. One intervention focused on phonological awareness, blending skills, and letter-sound agreement; this was the Phonological Analysis and Blending/Direct Instruction (PHAB/DI) condition. The other treatment group was trained to identify words by analogy training, as adapted from the Benchmark School (Gaskins et al., 1992); this condition was called the Word Identification Strategy Training (WIST). Lovett et al. found that both interventions were effective in improving reading skills. Children in both conditions were also able to transfer what they learned to unknown and uninstructed words. The WIST group was more successful in transferring their learned skills to real words, whereas the PHAB/DI training made gains in both real and unknown words.

The current study is an expansion of a study that compared the reading interventions of phonological awareness and analogy-based approaches. O'Shaughnessy and Swanson (2000) examined instruction techniques used with poor readers. Second grade children from a public school setting were chosen according to the following criteria: (a) scoring at or below the 25<sup>th</sup> percentile on the Woodcock Reading Mastery Tests-Revised (WRMT-R): Word Identification and Word Attack (Woodcock, 1987); (b) average intelligence scores on Wechsler Intelligence Scale for Children-3<sup>rd</sup> Edition (WISC-III): Information, Block Design,

and Vocabulary (Weschler, 1991); (c) at least one grade below on Curriculum-Based Measurement (CBM); and (d) below the 25<sup>th</sup> percentile on the Test of Phonological Awareness (TOPA, as cited in O'Shaughnessy & Swanson, 2000). Children were assigned to a Phonological Awareness Training (PAT), Word Analogy Training (WAT), or a mathematics control group. The PAT condition focused on improving awareness of sounds of words through rhyming, sound and segmenting, and spelling activities. In the WAT condition, children were taught to use parts of words that they had learned previously in training or in school to decode unfamiliar words. The children were taught comparison/contrast techniques to apply to known words to assist them in decoding the new word. Recall of rhyming word lists assessed phonological working memory. The WIAT Numerical Operations and Math Reasoning subtests were used to assess the control group's math growth. Performance on the WRMT-R Word Identification, Word Attack, and Passage Comprehension subtests and the Peabody Individual Achievement Test-Revised (PIAT; Markwardt, 1989) Spelling subtest were used to assess transfer of learning. CBM probes were also used to monitor individual performance.

O'Shaughnessy and Swanson (2000) found that the children in both groups improved their reading skills in comparison with the control math group. Each group progressed from a frustration reading level to an instructional reading level by the end of the interventions. Both groups also increased their phonological awareness skills, as measured by TOPA. In addition, both groups

made gains in acquisition of specifically trained content and on generalizations of word identification skills to untaught words. Finally, both groups improved their word attack skills, with WAT improving in passage comprehension and spelling compared to the math control group, as measured by WRMT-R. No differences were found between the two groups in oral reading fluency. However, the interventions were provided for only six weeks.

The present study followed the work of O'Shaughnessy and Swanson (2000). However, the interventions in the present study were implemented for eight weeks in a community setting with girls. The effectiveness of the reading interventions was assessed using CBM, Wide Range Achievement Test-3: Spelling and Reading (WRAT-3; Wilkinson, 1993), and Wechsler Intelligence Scale for Children-Third Edition: Vocabulary (WISC-III; Wechsler, 1991). I expected that both reading interventions would lead to improved reading skills. I also explored whether phonological awareness would lead to greater improvement than the analogy-based approach as some research has suggested (Cupples & Iacono, 2000; Schneider et al., 2000; Torgeson et al., 1992).

## Method

### *Participants*

Thirty-six girls (age range 6 years, 8 months to 7 years, 8 months) from diverse ethnic backgrounds, members of Girls Incorporated of Omaha, were evaluated for participation in the current study. They were entering the second or third grade in the fall of 2003. Eleven girls were eligible for participation and

were randomly assigned to one of the two conditions, but only 7 were included in analyses. Four girls were excluded due to 3 or more intervention session absences. Four girls ( $M$  age = 7 years, 3 months) were in the word analogy-based group and three girls ( $M$  age = 6 years, 11 months) were in the phonological awareness group. During the study, the girls did not receive any remedial assistance outside of their general education classroom.

After written permission was obtained from the children's parents or legal guardians, the children were screened using Curriculum-Based Measurement (CBM). The participants scored at least one grade below grade level or were reading at "frustration," which was fewer than 40 words correct in one minute. CBM pretest scores of the girls in the analogy-based condition ranged from 4 words read per minute to 17 words read per minute. Participants in the phonological awareness group obtained CBM pretest scores ranging from 6 words read per minute to 17 words read per minute. Participants also earned an average intelligence score on the Vocabulary subtest of the WISC-III (see Table 1). The average intelligence score on the Vocabulary subtest for the word analogy group was 8.50 and 9.33 for the phonological awareness group. Lastly, each participant scored one grade below her current grade in school or scored at or below the 25<sup>th</sup> percentile on the Wide Range Achievement Test-3: Reading and Spelling (WRAT-3; Wilkinson, 1993), using the Blue Form. Participants in the word analogy and phonological awareness groups earned reading pretest standard scores ranging from 79 to 90 and 83 to 89, respectively. Spelling

pretest standard scores for the word analogy and phonological awareness groups ranged from 74 to 90 and 90 to 91, respectively.

### *Setting*

The intervention portion of the study took place at the Development Center at Girls Incorporated in Omaha, Nebraska. During the intervention, the room was not occupied by other children.

### *Materials*

The curriculum was specifically developed for the present study, using previous research as a guide (Cupples & Iacono, 2000; Lovett et al., 1990; O'Shaughnessy & Swanson, 2000; Schneider et al., 2000; Torgeson et al., 1992). (See Appendixes B and C for sample lesson plans.) To ensure that the interventions reliably follow the phonological awareness and analogy-based approaches, three professors of special education, communication disorders, and school psychology reviewed the lessons.

The analogy-based group was trained to decode words by connecting the sounds of rimes and spelling patterns. Ideas from Gaskins et al. (1988) and Gaskins et al. (1992) provided a basis for the analogy-based intervention. The children were taught approximately 20 words through repetition and context activities (see Appendix A for a portion of the word list). The analogy group used rhyming activities as well. Three weeks into learning the words, the participants learned to decode unknown words. The children were taught to identify spelling



patterns in any new words that they encountered. They were instructed to use those known words or spelling patterns to decode unknown words.

Children in the phonological awareness group were trained to connect spoken language to words in the alphabet. Activities focused on the use of sound blending and segmenting, rhyming, spelling, and letter-sound correspondence.

### *Procedure*

The experimenter conducted all assessments and training sessions. When the children were selected, parents or legal guardians were contacted in person or by telephone to explain participation in the study. The importance of the child's presence at the assigned sessions was emphasized, and parents were given the opportunity to ask questions.

Participants were randomly assigned to one of the two treatments: word analogy-based training and phonological awareness training. Each group received a 75-minute instruction session once a week for eight weeks. Progress monitoring was conducted concurrently, but independently of the interventions sessions for all participants. The assessment sessions occurred during weeks 2, 4, and 6. The experimenter administered three random probes at grade level. Participants read each probe aloud for 1 minute. Each CBM probe was scored for number of correct words read and errors per minute. The median correct words read per minute and median number of errors per minute were recorded

and graphed. Participants completed the program on the 8<sup>th</sup> week, at which time they completed CBM, the Tan form of the WRAT-3, and WISC-III: Vocabulary.

### *Measurement*

Three measures were used to screen participants and assess the effectiveness of the interventions. As a pre- and post-test measure, the participants were given the Wide Range Achievement Test-3<sup>rd</sup> Edition: Spelling and Reading (Wilkinson, 1993) to test basic skills of reading and spelling. Spelling was also assessed as it was a component of the interventions. WRAT-3 has two alternative test forms: Blue and Tan. The Blue was administered as a pre-test, and the Tan as a post-test. The alternative-form reliabilities are more than sufficient with a range from .82 to .99. The WRAT-3: Spelling involves writing one's name, 13 individual letters, and up to 40 words. The WRAT-3: Reading subtest includes reading 15 letters and 42 single words. Each participant was able to read all the letters, and attained a standard score at least one grade below her current grade or below the 25<sup>th</sup> percentile.

To assess intellectual ability, each participant was the given the Vocabulary subtest of the Wechsler Intelligence Scale for Children-III (Wechsler, 1991). The Vocabulary subtest was chosen because of its high measure of *g* (62% of its variance attributed to *g*). Vocabulary is one of the most reliable subtests in the WISC-III. The reliability coefficient is above .70 in all of the age groups, with a range of .79 to .91. Also, subtest specificity is either ample or adequate for the ages used in the study.

Progress monitoring and effectiveness was measured, using Curriculum-Based Measurement (CBM). Participants' oral reading fluency assessed whether learning transferred to the reading curriculum. Participants' reading fluency indirectly measured decoding skill, which was beneficial for assessing the reading interventions. CBM has been designed to measure oral reading fluency, as well as the speed and accuracy of words read per minute. In addition, CBM is a sufficient monitor of reading instruction. Numerous studies have found validity coefficients of .36 to .91 and reliability coefficients from .82 to .97 (Shinn, 1989). Therefore, CBM appears to be an adequate measure for reading performance.

### Results

In addition to descriptive analyses, regression analyses were used to examine change over time and to explore differences as a function of reading intervention. Three variables were computed to represent the linear change in CBM, reading, and spelling standard scores. Each variable was regressed separately on the reading intervention variable. Reading intervention was contrast coded (i.e., word analogy was coded +1 and phonological awareness was coded -1). The test of the intercept in each regression equation tested whether the students demonstrated significant improvement over time in reading. The tests of the coefficients associated with the predictor tested whether improvement differed as a function of the intervention. Of course, the power of these tests was low because of the small sample size.

### *CBM Scores*

The progress monitoring results, as measured by CBM every 2 weeks, are displayed in Figures 1 and 2. The number of words read by children in the word analogy group was low ( $M = 11.75$ ; range, 4 to 17) and the error rate was consistently high ( $M = 15$ ; range, 8 to 30) (Fig. 3 & 4). The number of words read by children in the phonological awareness group was also low ( $M = 7$ ; range, 6 to 17), but the error rate was more moderate ( $M = 7$ ; range 6 to 8).

The regression analysis indicated that the children exhibited significant improvement over time in CBM scores,  $F(1, 5) = 24.90$ ,  $p < .01$ . This improvement over time did not significantly differ for children in the two conditions,  $p > .47$ . In other words, the children demonstrated improvement in CBM scores regardless of whether they received the phonological awareness or word analogy intervention.

### *WRAT: Reading Scores*

Pre- and post-testing results of the WRAT: Reading subtests are displayed in Figures 5 and 6. Pre-test scores for children in the word analogy and phonological awareness groups were similar ( $M_s = 84.25$  and  $85.67$ , respectively). At the time of post-testing, each participant in the word analogy and phonological awareness groups improved at least two standard scores ( $M_s = 88.00$  and  $93.67$ , respectively).

The regression analysis indicated that the children displayed significant improvement over time in reading scores,  $F(1, 5) = 7.73$ ,  $p = .04$ . This difference

did not depend on whether the children received the word analogy or phonological awareness intervention,  $p = .36$ .

### *WRAT: Spelling Scores*

Pre- and post-testing results for the WRAT: Spelling subtests are displayed in Figures 7 and 8. Phonological awareness pre-test spelling standard scores were slightly higher than the word analogy scores, ( $M_s = 90.67$  and  $85.25$ , respectively). Most of the participants in the phonological awareness and word analogy groups spelled more words correctly at the time of post-testing ( $M_s = 98.67$  and  $90.25$ , respectively).

The regression analysis showed that the children exhibited significant improvement over time in spelling scores,  $F(1, 5) = 7.40$ ,  $p = .04$ . Once again, this significant improvement did not depend on whether children received the word analogy or phonological awareness intervention,  $p > .55$ .

### Discussion

The purpose of this study was to examine the effectiveness of two reading interventions in a community setting. It was predicted that gains should be made in the word analogy-based and phonological-awareness groups, as measured by words read per minute on CBM probes, and reading and spelling performance, as based on WRAT-III scores. It was also hypothesized that the phonological awareness condition would display more reading gains than the analogy-based condition.

O'Shaughnessy and Swanson (2000) found that both word analogy-based and phonological awareness training enhanced children's reading skills in comparison with a control group. O'Shaughnessy and Swanson also found that both types of training improved word attack skills and that word analogy training improved passage comprehension and spelling as compared to the control group. However, no differences were found between the two types of training in oral reading fluency. The present study did not have a control group, limiting the types of comparisons that can be made. Nevertheless, as expected, the present study found that the girls generally made reading gains, as measured by words read per minute and improvement in standard scores on reading and spelling subtests of the WRAT-3. In addition, phonological awareness and analogy-based training appeared to be equally effective, although the failure to find a significant difference may have resulted from a lack of power given the small sample size.

Previous research supports the effectiveness of both interventions; however, phonological awareness is the most researched and has proven to be successful with children in various populations. Lovett et al. (1994) demonstrated the effectiveness of word analogy and phonological awareness training in which reading real words transferred to other measures. To further explain this improvement, phonological awareness activities were employed in the word analogy training group. For example, a compare and contrast strategy required recognizing and generating rhyming words to build phonological

awareness. Once the target words were learned, children practiced applying their skills to unfamiliar words. This evidence may support the importance of including phonological awareness training in reading curricula.

In the present study, improvement in reading and spelling performance may also be attributed to enforcement of individual reading strategies. For example, three participants were encouraged to use their fingers to help them track during reading. This seemed to help them avoid skipping lines. Participants were also praised and extrinsically rewarded for sustained attention to the reading task. Because the reading groups were small, distractions were minimal. The reason for the decline in performance of two participants is unclear, but may be a result of the nature of the test, individual differences, or simply chance variation.

Unlike O'Shaughnessy and Swanson (2000) who conducted their study in a public school, the present study was carried out in a less structured after-school setting. The children seemed to become more confident about and feel more positively toward reading. For example, they attempted more of the words presented to them, and frequently made positive comments during their sessions, such as "This is fun," "Can we do that again?" or "What do we get to do today?" The children also seemed to become more comfortable with the experimenter, becoming more verbal and putting more effort into intervention activities and assessment sessions. None of the participants refused to attend any of the intervention sessions. The participants and other girls not in the study

seemed eager to work with the experimenter. A stigma from being singled out for reading instruction was not apparent.

The present study also indicates that after-school programs are capable of providing more than just supervision of behavior. Good after-school programs are in a position, in terms of expertise and flexibility, to deliver basic skills and provide hands-on opportunities for application. Through collaboration with reading specialists, such as school psychologists, nonprofessionals can be trained to implement reading interventions in the community. Vadasy et al. (1997) similarly demonstrated that nonprofessional tutors could successfully provide phonologically based community-tutoring to first-grade children at risk for reading difficulties. In order for a tutoring program to be successful, it is necessary to have motivated and dependable tutors. The tutors should also receive regular supervision to reinforce instructional objectives.

During the implementation of the reading intervention there were few logistical problems. Transportation to and from Girls Incorporated was provided each day, which is generally beneficial, although attendance was not particularly problematic for participants in the present study. Rooms were reserved in advance, but it was not difficult to find appropriate space for the sessions. Because the intervention sessions were after-school, beginning at 4:30 p.m., participants were hungry and tired from a long day of school; therefore, they were given snacks (i.e., juice and crackers) about 15 minutes before the beginning of each session. From a teaching perspective, both reading interventions were



reasonably easy to implement. If nonprofessionals implement the interventions, guidance from professionals would be necessary. Anecdotally, the compare and contrast strategy seemed very difficult for the girls to apply automatically. They required prompting in the intervention sessions to apply the strategies (cues were not used during assessments).

Possible limitations of the present study include the small sample size and exclusion of boys, which makes it difficult to generalize to other populations. Another limitation was the lack of an independent observer to monitor treatment integrity. Finally, the experimenter provided the training and conducted all assessments. The study would have been stronger methodologically if the training had been provided by an experimenter who was blind to the hypothesis and if the progress monitoring data had been gathered by someone who was blind to condition. Treatment integrity should also be assessed after each intervention session, using methods such as a checklist.

In future research, implementing the reading interventions for a longer period of time should be considered. Implementing the interventions longer than 8 weeks would provide greater opportunity to examine effectiveness. It would also be beneficial to implement other reading interventions in community settings, particularly in the summer. The summer puts children, especially children with learning disabilities, behind on their academic skills (Allinder & Eicher, 1994). For example, there may be the occurrence of a "summer slide," in which children, especially children from low-income families, fall behind in study

skills and vocabulary words between Memorial Day and Labor Day. During a long school break, students tend to lose some academic skills, which may lead to time exhausted in school regaining those skills. In addition, it may be effective to include the error correction strategy, Phrase Drill, during reading of the CBM passages to lower a high error rate (O'Shea, Munson, & O'Shea, 1984). When the child makes a mistake, the examiner reads the word to the child. The child then rehearses, reading the word correctly three times in the context of the sentence. Inclusion of Phrase Drill during assessment sessions would be time-consuming, but would likely be a highly effective treatment.

In conclusion, it may be useful for school psychologists to form collaborative relationships with community-based organizations to prevent and remedy academic deficits. School psychologists have experience with academic consultation, and could apply those skills in working with community agency staff members. An overall reading gain in both groups provides support for the implementation of reading interventions. It is not necessary for school psychologists to put the reading interventions into practice themselves. If community organizations systematically employed reading interventions into their programs, the incidence of reading problems may well be reduced.

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Table 1

*WISC-III: Vocabulary Subtest Scores*

WISC-III: Vocabulary		
	Pretest	Post-test
Word Analogy		
Child 1	8	7
Child 2	11	12
Child 3	8	9
Child 4	7	7
Phonological Awareness		
Child 1	6	7
Child 2	9	9
Child 3	13	13

### Figure Captions

*Figure 1.* CBM scores for word analogy group.

*Figure 2.* CBM scores for phonological awareness group.

*Figure 3.* Correctly read words and errors for word analogy group.

*Figure 4.* Correctly read words and errors for phonological awareness group.

*Figure 5.* Pre- and post-test WRAT: Reading performance for the word analogy group.

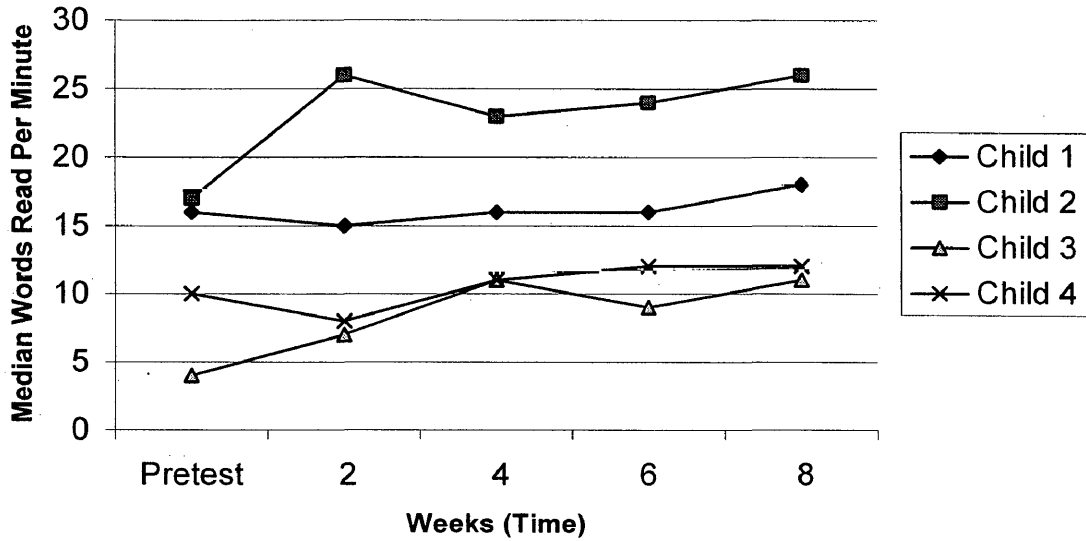
*Figure 6.* Pre- and post-test WRAT: Reading performance for the phonological awareness group.

*Figure 7.* Pre- and post-test WRAT: Spelling performance for the word analogy group.

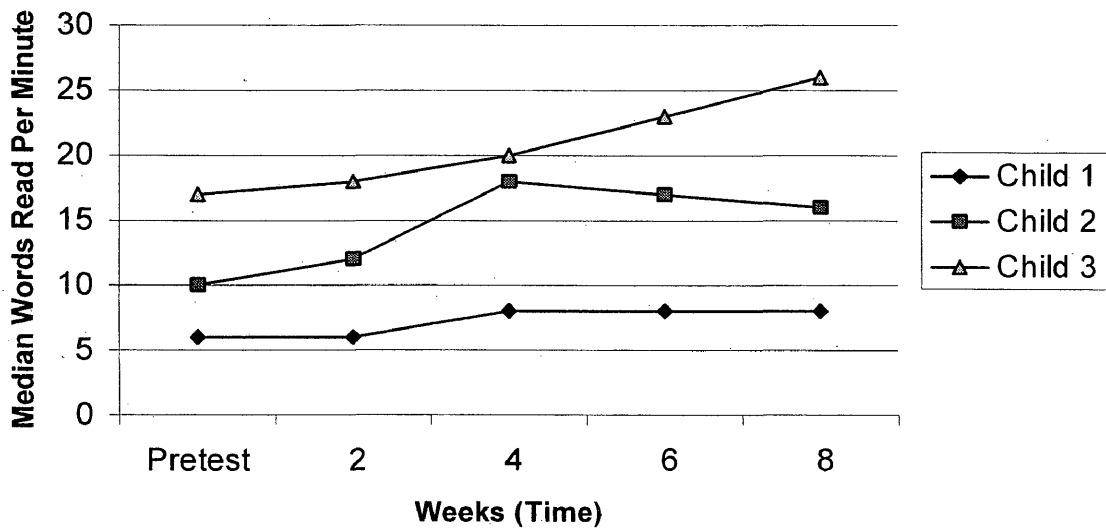
*Figure 8.* Pre- and post-test WRAT: Spelling performance for the phonological awareness group.



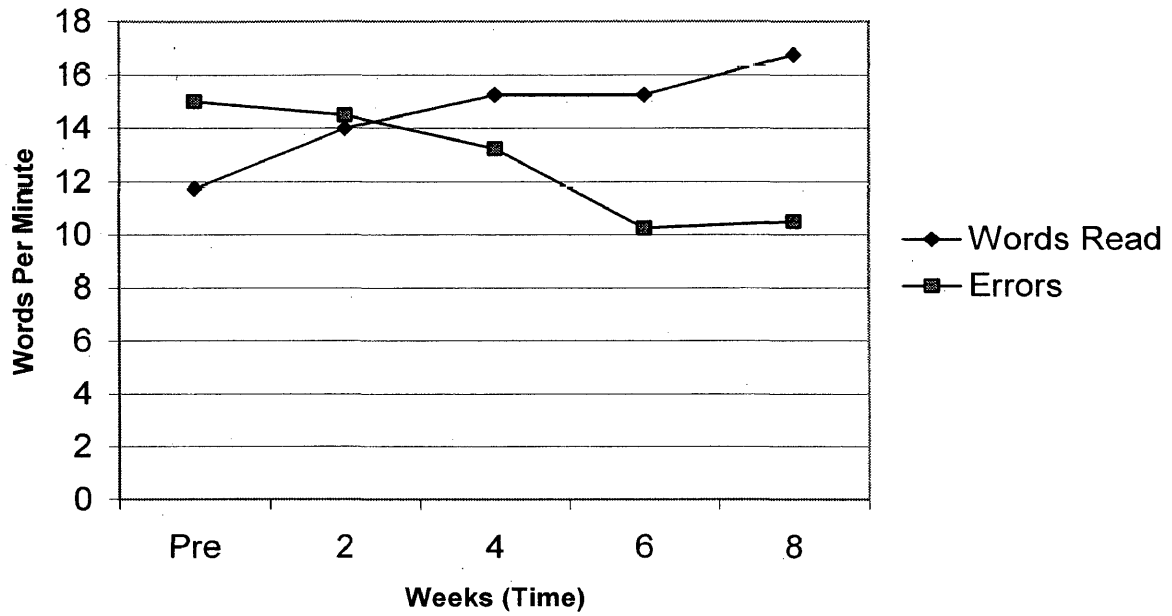
### CBM Scores for Word Analogy Group



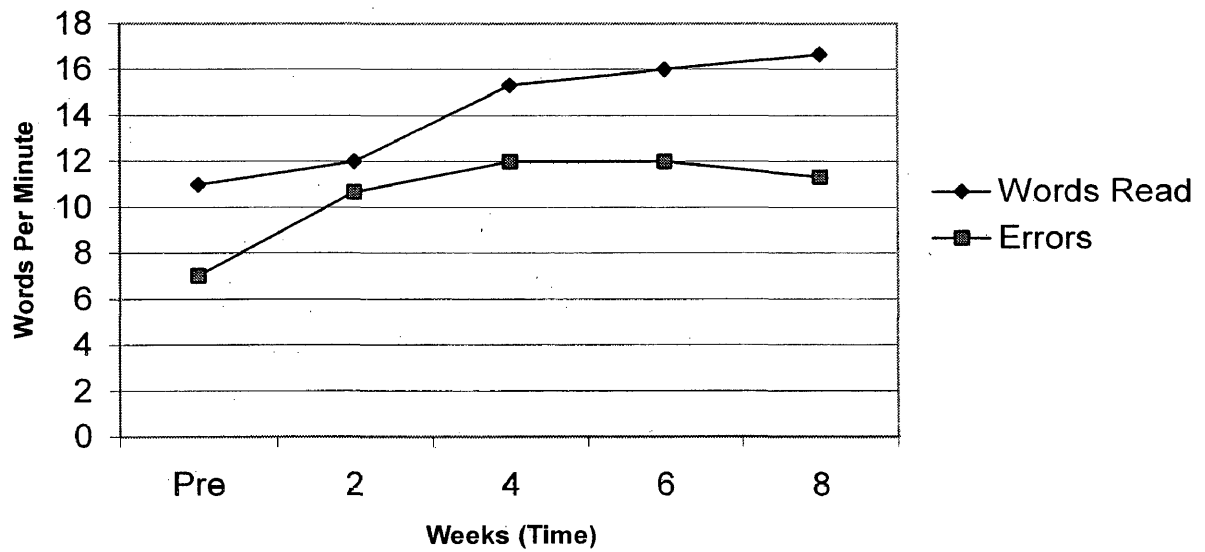
### CBM Scores for Phonological Awareness Group



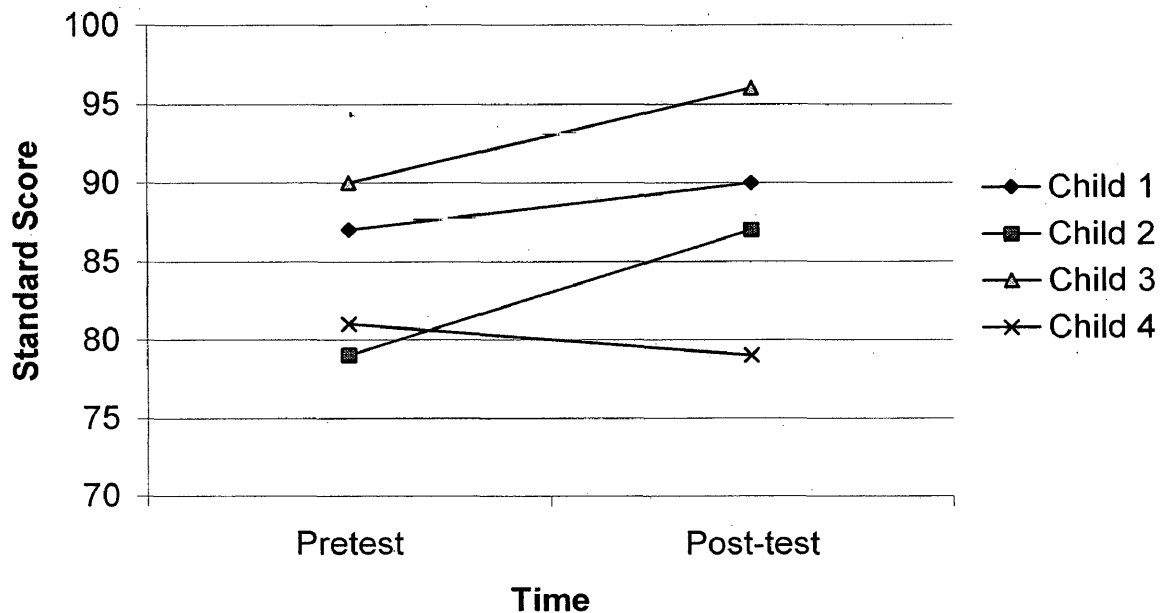
**Correctly Read Words and Errors for Word Analogy Group**



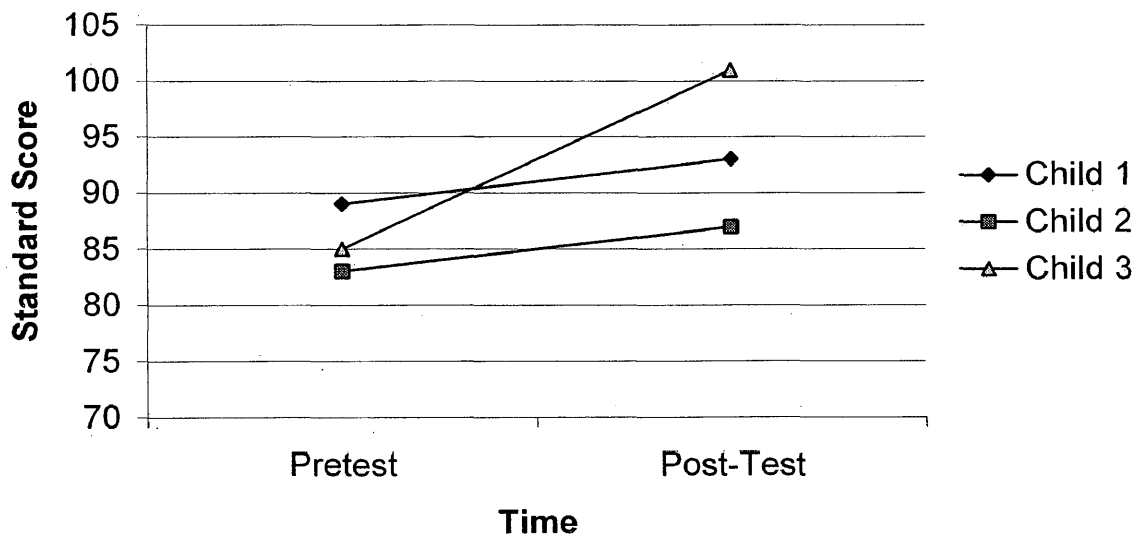
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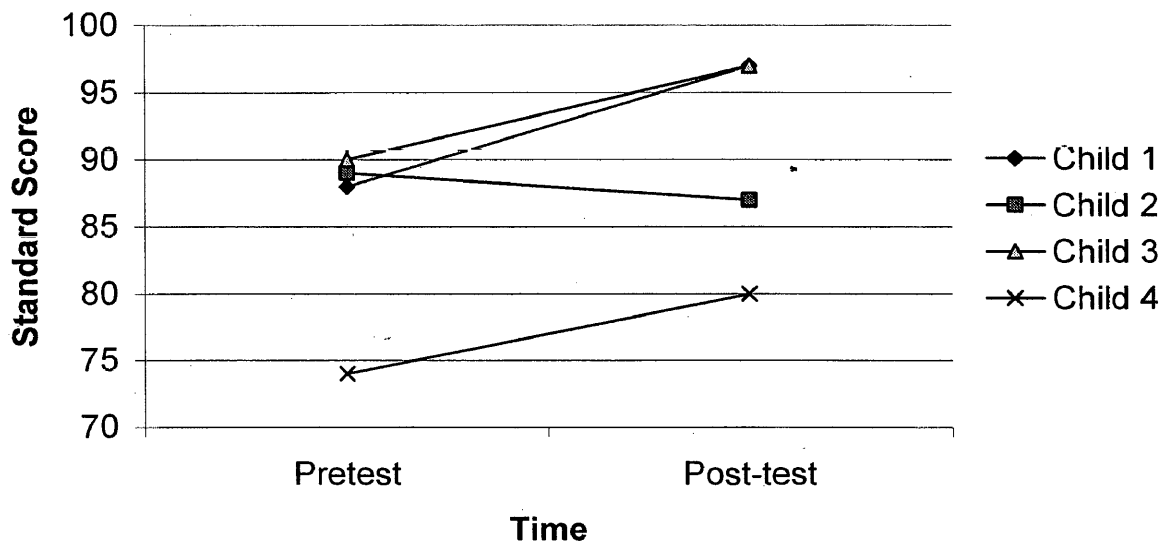
**Pre- and Post-test WRAT:Reading Performance for the  
Word Analogy Group**



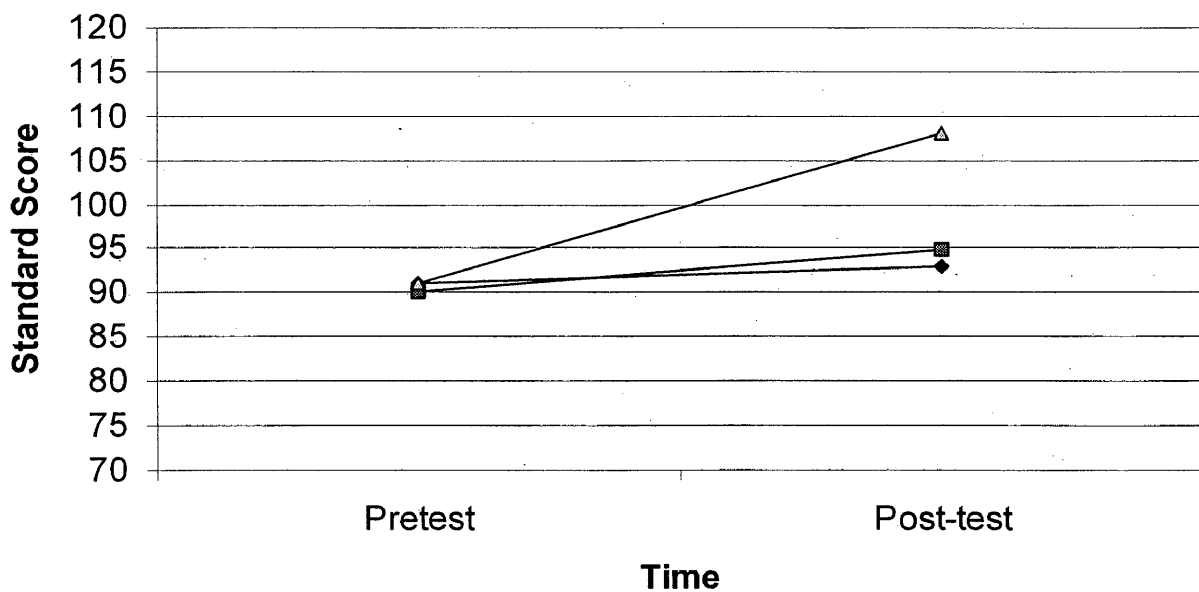
**Pre- and Post-test WRAT:Reading Performance for the  
Phonological Awareness Group**



**Pre- and Post-test WRAT: Spelling Performance for the  
Word Analogy Group**



**Pre- and Post-test WRAT: Spelling Performance for the  
Phonological Awareness Group**



## Appendix A

## Key Spelling Patterns

-a	-e	-i	-o	-u	-y
A	he	hi	go	club	my
had	red	mice	job	truck	baby
all	see	kick	clock	jump	
am	ten	did	old	bug	
can	tell	smile	school	up	
and	bleed	will	cow	glue	
map	end	time	not		
car	tent	vine	corn		
has	her	king	zoo		
ask	nest	phone			
cat					
saw					
day					

## Appendix B

### Word-Analogy Based Group Sample Lesson Plan

Goal: Review key words from the previous week, as well as their meanings, use known words to decode unknown words, manipulate sounds, and discriminate structural components of words.

Materials: key words posted on the chalkboard, tongue twister written on strip posted on the board, necessary worksheets, age appropriate book

- Review the pronunciation and meaning of key words from the previous week. We will then write a story using newsprint and the key words. The key words will be underlined and read.
- Model the decoding of *momentum*, using the keywords *go*, *ten*, and *drum*.
- The girls will be given an “Every-Pupil-Response” form that contains five sentences containing blanks. Below these sentences is a word bank with the key word from the previous week. The sentences are read to the girls and the girls write in the correct word from the word bank.
- A tongue twister will be written on a strip attached to the chalkboard. The investigator reads the tongue twister, and the girls read with the instructor, then individual girls can volunteer to read it.
- The girls will be given a Word Sort Activity. At the top of a worksheet are three columns each headed by a key word. Below the key words is a word bank of 12 words each containing one of the three spelling patterns represented by the key words. When completed, the girls will read the words.

- On the bottom half of the page are sentences containing some additional words that fit the spelling patterns featured in the lesson. Girls will be asked to write below the underlined words the key words that would help decoded each underlined word.
- If time permits, read a story to the girls.

## Appendix C

### Phonological Awareness Group Sample Lesson Plan

Goal: The girls will practice letter-sound correspondence of short vowels, synthesize words from their separate syllables, manipulate sounds, and practice counting segments in a stimulus word.

Materials: plastic letters, word lists, lined paper, pencils, necessary worksheets, and age appropriate book

- The sounds of the alphabet will be reviewed.
- Using plastic letters, the girls will find the letter that says /a/ and place it in front of them. The girls will then be asked to find the letter that says /t/, and place it to the right of the /a/, and say what they have written.

Blending of the sounds will be demonstrated. Leaving the word *at* in place, add /f/ to the beginning of the word. The girls will blend the sounds and say the new word. The participants will then be asked to change /f/ to /s/. The activity will continue using these words: *cat, mat, bat, rat, hat, and pat*. Each of the words will be written on paper as we go along. This activity will be repeated with other word endings: *-an* and *-ap*.

- The girls will count the number of segments present in a stimulus word. For example, "Clap out the number of parts you hear in 'yesterday'." This activity will be repeated with other words: *identification, momentum, and medicine*.



- A student's name will be chosen to manipulate (with her permission). We will discuss the onset (first consonant or blend in a word) and rime (last group of sounds beginning with the vowel) parts of the child's name. The girls will be told that they will be changing the onset, but not the rime part of the girls' name. We will brainstorm real and nonsense words that rhyme with the name. The chosen name (Mary) in the following song:

"Let's do Mary!

Mary, Mary, mo Mary,

Banana, fanna fo Mary,

Fe, fi, mo Farry, Mary!"

- If time permits, read a story to the girls.