

**THE COMPARATIVE EFFECT OF FLUENCY INSTRUCTION WITH AND WITHOUT A COMPREHENSION STRATEGY FOR ELEMENTARY SCHOOL STUDENTS****Beverly Patton****Shane Crosby****David Houchins****Kristine Jolivette***Georgia State University*

*The purpose of this study was to extend the Great Leaps Reading Program (GLR) knowledge base by combining the fluency intervention of the GLR Program with a comprehension strategy. The participants were 59 first, second, and third grade students who were randomly assigned to one of two treatments. The Treatment group one received the GLR Program as it was designed. The Treatment group two received the GLR Program and a strategy for answering three comprehension questions. Over 15 weeks, students were provided with approximately 10 minutes of instruction twice a week. Pre- and post-test measures included the Woodcock Johnson Test of Achievement III and the Test of Word Reading Efficiency. Analyses of variance indicated that Treatment one performed statistically better in the area of Broad Reading as compared to Treatment two. Results are discussed in terms of the importance of reading fluency and reading comprehension and whether the addition of a comprehension strategy is an efficient way of increasing student's reading fluency while also increasing reading comprehension skills.*

Although decades of educational research document the importance of reading to the individual and society as a whole (Prior, Sanson, & Smart, 1995), reading proficiency continues to elude a significant number of elementary children. According to a national report on reading (NAEP; National Assessment of Educational Progress, 2005), approximately 37% of fourth grade students failed to achieve at the most basic reading level. While reading scores for the highest performing students have improved over time, the scores of the lowest performing students have been relatively constant with minimal gains (NAEP). These findings are consistent with previous findings that poor readers continue to experience reading difficulties (Juel, 1988; Speece & Ritchey, 2005) and that there is a clear and critical need for effective early reading interventions (Good, Simmons, & Smith, 1998).

In light of this critical need, the purpose of this study was to investigate the comparative impact of a fluency-based supplemental reading program, the *Great Leaps Reading Program* (GLR; Campbell, 1995) with and without a comprehension strategy, on the oral reading fluency and comprehension skills of elementary school-aged children. The study replicates and extends prior research on the *GLR Program* with the inclusion of a comprehension strategy instructional component. This article begins with a discussion of the literature on reading fluency, reading comprehension, and fluency and comprehension combined studies focusing on elementary school-aged students. In addition, research on the three components of the *GLR Program* (phonics, high frequency words, and repeated reading of text/stories) is provided.

*Fluency*

Since the late 19<sup>th</sup> century (Cattell, 1886), researchers have investigated the difficulties associated with reading from an oral reading fluency perspective. Though a consensus on a definition of fluency is lacking (Schwanenflugel, Meisinger, Wisenbaker, Kuhn, Strauss, & Morris, 2006; Wolf & Katzir-Cohen, 2001) researchers seemingly agree that oral reading fluency is the quick and accurate reading of text with expression (Kuhn, Schwanenflugel, Morris, Morrow, Woo, Meisinger et al., 2006). Students who lack proficiency in reading fluency display deficiencies in automatically decoding text (LaBerge & Samuels, 1974). Therrien (2004) describes the process of inadequate reading fluency as a *bottleneck* which impedes the flow of cognitive resources because the readers' primary focus is on decoding text.

Oral reading fluency is considered an important element of the reading process (NRP; National Reading Panel, 2000) because it enables readers to see words and phrases as chunks of text and serves as a bridge to effective literacy development (Donahue, Voelkl, Campbell, & Mazzeo, 1999). The importance of oral reading fluency has been documented (Fuchs, Fuchs, Hosp, & Jenkins, 2001). Fuchs et al. describe a *trajectory* of oral reading fluency, which suggests that fluency involves the greatest amount of growth in the early elementary years, with a negatively accelerating curve through the middle and high school years. Consequently, as children move through school, the nature of reading development may change to reflect analysis of expository text.

For example, Kourea, Cartledge, and Musti-Rao (2007) conducted a twenty week study on six students to determine if a total class peer tutoring intervention increased students' reading fluency as a generalization measure of sight-word recognition in untaught passages. Students in an inclusive second/third grade classroom participated in peer tutoring for thirty-minute sessions, three times per week. A multiple-baseline across-subjects design was used to evaluate the effectiveness of the intervention. Although data were only taken on six students, the entire class participated in the peer tutoring. Results indicate that all six students increased their reading fluency over classroom instruction levels on the reading passages. Fluency increases showed a group mean difference of 13.7 words per minute over baseline. However, because reading fluency and comprehension measures were not taken on reading passages during baseline, no functional relationship could be determined between peer tutoring and students' fluency on the oral reading passages.

In another study, Martens, Eckert, Begeny, Lewandowski, DiGennaro, Montarello, et al. (2007) used a matched-pairs group-comparison design to examine the effects of an after-school fluency-based reading program with 30 second and third grade students. The independent variable was inclusive of a listening passage preview, a repeated reading, or a phrase drill error correction. The fifteen students in the treatment group were exposed to the fluency-based intervention three times per week for five weeks. The 15 students in the comparison group received the naturally occurring after school program curriculum. During each intervention session, students were asked to read a pre-determined grade-level passage. If the student did not meet the criteria of 100 WPM, one of the three fluency-based intervention methods was implemented. Results indicated that both second and third grade students in the intervention group made significant correct word per minute gains (WPM) on the timed reading passages. Second grade participants showed mean fluency gains of 22.76 correct WPM after training. Third grade participants in the intervention group displayed mean fluency gains of 24.52 correct WPM after training. Although fluency gains were found, it is unclear which of the three interventions produced their results.

Taken together, current literature continues to support the efficacy of fluency-based interventions to improve the overall reading ability of students exhibiting reading deficits. Less is known, however, about the association between increased reading fluency and reading comprehension for first grade students at-risk for reading disabilities (Chard, Vaughn, & Tyler, 2002; Kuhn & Stahl, 2003; Speece & Ritchey, 2005).

### *Comprehension*

Given the widely accepted notion that the ultimate goal of reading is the construction of meaning (Fuchs et al., 2001), any examination of oral reading fluency is invariably associated with reading comprehension. This is due in part to the widely cited theory of automaticity (LaBerge & Samuels, 1974). The theory of automaticity suggests that with increased speed and accuracy of reading subskills (e.g., letter identification, decoding) cognitive resources become available for reading comprehension of connected text. Conversely, attention focused on reading subskills results in less cognitive resources for comprehension.

Reading comprehension is a process consisting of the simultaneous extraction and construction of meaning through interaction and involvement with written language and consists of three essential elements: a) the text; b) the function of the text, and c) the reader's capacities, abilities, knowledge, and experience with the act of reading (Snow, 2002). Unfortunately, many students require instruction on additional reading skills necessary to enhance their ability to comprehend text (Vaughn, Chard, Bryant, Coleman, Tyler, Linan-Thompson et al., 2000). Researchers suggest that systematic instruction on the use of comprehension strategies may address the reading difficulties experienced by these students (National Reading Panel, 2000).

Comprehension strategy instruction provides a framework by which students become aware of how effective they comprehend text and over time, enable the student experiencing reading difficulties to be an independent reader (National Reading Panel, 2000). Studies indicate that the use of comprehension strategies by elementary school-aged children improves their ability to comprehend text (Eilers & Pinkley, 2006; Garner & Buchna, 2004). Eilers and Pinkley employed metacognitive strategies to improve the reading comprehension of twenty-four first grade students without disabilities. Instruction was provided in small and large group settings and consisted of: a) using prior knowledge to make text connections, b) using of context clues to make predictions, and c) sequencing of story events. Based on Reading Awareness results (Jacobs & Paris, 1987) the researches found a significant difference between the pre- and post-test scores following intervention. Results suggested that explicit instruction of metacognitive comprehension strategies significantly improved the comprehension skills of first grade students and that metacognitive instruction should begin early in students reading development.

In another study, Garner and Buchna (2004) focused on comprehension strategy instruction with 37 first grade students who were taught how to recognize specific story structure concepts while reading a narrative story. A two (intervention/comparison) x two (silent versus oral reading) x two (pre-reading questions versus no questions) design was used over a 16 week period. Recognition of story structure was hypothesized to transfer to the recognition of story structure within written text and subsequently, comprehension of text read. Students were asked to read a 410-word story and to remember as much as they could about what they read. Half of the students read stories orally while half read them silently. Half of the students were provided prompts at the beginning of the reading to remind them what to look for as they read while the others were required to give a free retell of the main character, setting elements, story problem, and story solution. Results indicated significant differences in the richness of description of story problem measures in favor of students who were exposed to the comprehension strategy instruction. The intervention group outperformed the comparison group in answering comprehension questions relating to character, setting, story problem, and solution. In addition, students in the intervention group exposed to the comprehension strategies were able to generalize the strategy to novel and more difficult reading passages.

Williams, Nubla-Kung, Pollini, Stafford, Garcia, and Snyder (2007) conducted research using a pre-, post-test design with 179 at-risk second graders, 15 of whom had identified disabilities, to evaluate the effectiveness of a reading comprehension program. Half of the participants participated in the intervention, while the other half was involved in a no-instruction control. The program included instruction in identifying the cause and effect in text, emphasizing key words, and using graphic organizers. During each of the 22 lessons, students created graphic organizers, discussed the concept of cause and effect, were introduced to four cause-effect clue words (i.e., since, therefore, thus, and because), used KWL (what I Know, what I Want to know, what I Learned) charts, were introduced to key vocabulary words used in the text, read the paragraph, and analyzed the cause-effect structure by circling the clue words within the text. Results from passage comprehension subtest of the *Woodcock Reading Mastery Test* indicate that no significant differences were found between the treatment and control groups. These studies highlight the mixed results of comprehension interventions to improve the reading comprehension of students in the primary grades. Furthermore, they demonstrate the efficacy of interventions that teach a comprehension strategy which can be generalized to novel texts.

#### *Fluency and Comprehension*

The association between fluency and comprehension has largely been examined theoretically and correlationally (Chard, et al., 2002; Kuhn & Stahl, 2003). Two reviews of the literature on oral reading fluency reveal that the majority of the research has focused on fluency intervention and assessed intervention effects on comprehension rather than providing fluency instruction in conjunction with explicit comprehension instruction. For example, in a synthesis of fluency intervention studies spanning 25 years, Chard, et al. (2002) evaluated the effects of fluency interventions on the reading achievement of students with learning disabilities. Their evaluation of 24 studies found that oral reading fluency growth was correlated with growth in reading comprehension. Seven of the studies reviewed included reading comprehension as a dependent variable. None of the studies included comprehension instruction as an independent variable. Five studies, however, did include comprehension activities (e.g., answering questions) as an element within the intervention procedures. Only one study was found that focused on a combination of fluency and comprehension instruction (Fuchs, Fuchs, Mathes, & Simmons, 1997). Within this study, Fuchs et al. examined the effects of a class wide peer tutoring program and repeated reading procedures on the reading achievement of 120 second through sixth grade students (low achievers with and without disabilities and average readers)

from 40 classrooms in 12 school districts. Comprehension instruction included paragraph summarization activities embedded within peer assisted learning activities to enhance comprehension of text. Paragraph summarization activities included responding to questions and directives such as *Who or what was the paragraph mainly about?* and *Tell the most important thing learned from this paragraph*. Results indicated that effect sizes for growth in comprehension were moderate ( $ES = .63$ ) and exceeded the effect sizes for fluency ( $ES = .20$ ).

In another review, Kuhn and Stahl (2003) examined 71 fluency intervention studies published between 1969 and 1996. The studies primarily focused on assisted-reading and unassisted repeated reading strategies to improve the oral reading fluency of students ranging from first through tenth grade. Of the 71 studies, 26 measured intervention effects on comprehension with positive results suggesting that fluency gains were associated with gains in comprehension. Only one study from the pool of studies included first grade students as participants (Turpie & Pastore, 1995).

While there is evidence to support an association between oral reading fluency and comprehension (Fuchs et al., 2001; Kuhn, 2005; Schwanenflugel et al., 2006), the majority of fluency research has been conducted with older elementary school aged students with only a few studies focusing on first graders (Chard et al., 2002; Kuhn & Stahl, 2003). Furthermore, only one study has used fluency instruction in conjunction with comprehension instruction to improve the overall comprehension ability of first grade students (Fuchs et al., 1997).

#### *Great Leaps Reading Program*

*The Great Leaps Reading Program* (GLR) is a supplemental reading program designed to improve reading fluency that incorporates repeated exposure to oral reading activities. Students are required to complete one-minute timed reading activities in the areas of phonics, high frequency words, and stories. It is inclusive of empirically supported instructional practices suggested to be essential to fluency and reading comprehension development such as providing corrective feedback from an adult, reading until a criterion is reached (Therrien, 2004), and modeling of appropriate reading behavior (Kuhn et al., 2006). Several studies have found the *GLR Program* to be effective in increasing the oral reading fluency of both elementary and middle school students with and at risk for reading disabilities. For example, Crosby, Jolivet, Fredrick, Alberto, and Cihak (in review) and Walker, Jolivet, and Lingo (2005) used single subject designs to investigate the efficacy of the *GLR Program* to increase the oral reading fluency of elementary school students exhibiting behavioral reading deficits while Mercer, Campbell, Miller, Mercer, and Lane (2000) used an experimental pre- and post-test three-group design to investigate the efficacy of the *GLR Program* to improve the fluency rates of 49 middle school students with learning disabilities whose average grade level reading equivalent was between first and second grade. The *GLR Program* also has demonstrated effectiveness with students with reading deficits in alternative settings. For example, Houchins, Gammel, and Shippen (2004) evaluated the effects of the *GLR Program* on the reading achievement of an incarcerated sixteen-year-old student with mild mental retardation who was reading on a first grade level. The results indicated that their teacher within an alternative setting could implement the *GLR Program* and that academic gains could be made in a short period of time.

Collectively, this brief body of research suggests that exposure to the *GLR Program* leads to positive fluency gains for students exhibiting reading deficits, yet the question of whether or not these fluency gains result in comprehension of text read fluently remains to be answered. To date, no research has examined the impact of the *GLR Program* to improve both oral reading fluency and reading comprehension.

#### *Empirical Support for Great Leaps Reading Components*

##### *Phonics*

Students experiencing reading difficulties typically have problems decoding words. Phonics instruction may remediate such deficits (Rack, Snowling, & Olson, 1992). The NRP (2000) found that systematic phonics instruction resulted in significant improvement in reading growth of kindergarteners when implemented early ( $i = .55$ ) and that systematic phonics instruction had a positive influence on decoding, word reading, and reading comprehension skills (Ehri, Nunes, Stahl, & Willows, 2001; NRP).

Speece, Mills, Ritchey, and Hillman (2003) used correlation and regression models to evaluate letter-sound fluency as a valid indicator of future reading competence. Thirty-nine academically diverse kindergarteners were individually administered a battery of language and reading measures during the

spring of their kindergarten year and in the spring of their first grade year. Examples of these measures included receptive vocabulary, phonological awareness, letter-names and sounds, letter word identification, word attack, and oral reading fluency. Data were analyzed using a blockwise forward entry procedure of regression. The following predictors were entered simultaneously in a single block: age, primary language, receptive vocabulary, phonological awareness, and letter-names and sounds. The results of this longitudinal study suggest that phonological awareness was a moderate predictor of letter word identification ( $R^2 = .529$ ), a high predictor of word attack ( $R^2 = .751$ ), and a moderate predictor of oral reading fluency ( $R^2 = .442$ ).

Stage, Sheppard, Davidson, and Browning (2001) used a hierarchical multiple regression model to investigate the utility of letter-naming and letter-sound fluency measures to predict first grade reading fluency growth of 59 kindergarteners. Three individually administered 1-minute timed letter naming and three letter-sound fluency probes were conducted at the end of the students' kindergarten year. Letter-sound and letter-name probe materials consisted of 100 randomly distributed lowercase and uppercase letters. Growth curve analyses of student fluency growth over an academic school year suggested that letter-sound and letter-name fluency: a) separately contribute to the prediction of oral reading fluency growth, and b) simultaneously contribute to the prediction of fluency growth at the end of first grade.

Muter, Hulme, Snowling, and Stevenson (2004) used descriptive and path analysis statistical procedures to determine the predictive validity of letter knowledge and phoneme sensitivity. Ninety students without disabilities ages four to five years were administered a battery of assessments three times over a span of two years from the *Phonological Abilities Test* (Muter, Hulme, & Snowling, 1997). Subtests included: rhyme detection, rhyme production, phoneme completion, phoneme deletion, rhyme oddity, and letter knowledge. The results indicated that letter knowledge and phoneme sensitivity are predictors of word recognition skills, although rhyme skills, vocabulary knowledge, and grammatical skills appear relatively unimportant. On other hand, regarding reading comprehension, higher-level language skills as opposed to phonological skills appeared to be of relative importance. This study confirms conclusions of previous studies demonstrating the importance early phonemic awareness as a predictor of word recognition skills (Castles & Coltheart, 2004; Hulme, Hatcher, Nation, Brown, Adams, & Stuart, 2002).

#### *High Frequency Words*

Ehri (2005) described sight word learning as a phonemic awareness and letter knowledge influenced process that requires the simultaneous mapping of graphemes to morphemes and spelling patterns of words to the appropriate pronunciation and meaning of the word. Speece and Ritchey (2005) suggest that sight word fluency may be a valid predictor of connected text reading fluency. They used growth curve analysis procedures to examine the oral reading fluency development of 276 first grade students identified as at-risk and not at-risk for reading difficulties. Students were assessed with a battery of reading fluency tests, one of which was the Word Reading Efficiency subtest of the *Test of Word Reading Efficiency* (Torgesen, Wagner, & Rashotte, 1999). Fluency measure probes were administered weekly for five months of the students' first grade year and in the seven month of their second grade year. Growth curve analyses suggested that when children begin reading words with some competency, word-level skills becomes the best predictors of fluency.

In addition, Eldredge (2005) used cross-lagged panel analyses to determine correlational and causal relationships between phonics knowledge, word-recognition, and fluent oral reading growth of 111 first, 117 second, and 76 third-grade students. Students were assessed on these variables with four word-recognition tests. Results of the analyses suggested that there a large correlation exists between word recognition and fluency.

#### *Repeated Reading of Text*

One often used method of increasing student fluency skills has been through repeated readings. Repeated reading emphasizes practice and repetition of reading (Samuels, 1979) and is noted to improve the reading achievement of students with reading disabilities (Mercer et al., 2000; Meyer & Felton 1999; National Reading Panel, 2000; Therrien, 2004). Repeated reading has been linked to positive outcomes for young readers as well as for college students (Chard et al., 2002). A meta-analysis of 12 repeated reading studies with students with learning disabilities ages 5-18 suggests that repeated reading improves the reading fluency of students with and without learning disabilities and may improve the oral reading fluency of novel text (Therrien).

Chafouleas, Martens, Dobson, Weinstein, and Gardner (2004) conducted an alternating treatment single subject design with three elementary students identified as having difficulties in reading. Repeated reading was combined with contingent reinforcement and performance feedback to determine which combination (repeated reading, repeated reading with performance feedback, or repeated reading with performance feedback and contingent reward) provided the greatest increase in oral reading fluency. Results indicated that all students increased their oral reading fluency over baseline in all three intervention conditions. The highest performing students at baseline benefitted most from the repeated reading intervention, while the student who demonstrated the lowest reading ability at baseline benefitted the most from repeated reading paired with performance feedback or performance feedback and contingent reinforcement. Results of this study indicate that repeated reading with performance feedback may be the most beneficial for students with low initial rates of reading fluency (Chafouleas et al., 2004).

The purpose of this study was to extend the *GLR Program* knowledge base by combining the fluency intervention of the *GLR Program* with a comprehension strategy. The research questions were:

1. What are the comparative effects of fluency based intervention with and without comprehension strategy instruction?
2. What are the social validity outcomes among students and teachers regarding the *GLR Program* plus comprehension strategy instruction?

## Method

### Participants

*Paraprofessionals.* Four paraprofessionals from the elementary school participated in the study. They worked the majority of their day assisting four kindergarten classrooms. They participated in the implementation of the intervention for an hour and a half per day during the intervention period. While participating in the study, they were required by the school administrator to leave their kindergarten classrooms for this period of time daily to work with the first, second, and third graders who participated in the study. Three paraprofessionals were female and one was a male. All four were African American. The average age at the time of the study was 43.75 years, with a range of 28 years to 55 years of age.

*Students.* (see Table 1 for participant information) All students in the four first grade classes, three second grade classes, and four third grade classes at the elementary school were given consent forms by their teachers explaining the intervention to be signed by their parent or guardian. Eighty-six of 167 students returned the consent forms and were pre-tested. Pre-test scores of these 86 students were analyzed and a selection criterion for this study was determined. If students scored below kindergarten grade level or above third grade level on the Passage Comprehension subtest of the Woodcock Johnson-Revised III (WJ-R III; Schrank,

**Table 1**  
**Participant Demographics by Group**

Characteristic	Treatment 1 n=33	Treatment 2 n=26
Gender		
Male	14	14
1 <sup>st</sup> grade	9	8
2 <sup>nd</sup> grade	3	4
3 <sup>rd</sup> grade	2	2
Female	19	12
1 <sup>st</sup> grade	12	8
2 <sup>nd</sup> grade	5	2
3 <sup>rd</sup> grade	2	2
Exceptionality		
Speech/Language	1	0
Other Health Impairments	0	1
Specific Learning Disabilities	1	0

McGrew, & Woodcock, 2001), they were not included in this study but were provided with instruction more appropriate to their reading needs. A total of six students scored below the kindergarten level and 12 scored above the third grade level. The 68 remaining participant of the study included 40 first

graders, 17 second graders, and 11 third graders ( $n = 68$ ). At the end of the intervention period, 59 students were still enrolled at the elementary school and were included in the data analysis. Participant gender was 47% male and 53% female. Three students received services from the special education department in the categories of speech/language impairment, specific learning disability, and other health impairments. The mean age at the beginning of the intervention for the Treatment group one was 7.1 years and 7.3 for the Treatment group two.

#### *Setting*

This study was conducted in an elementary school located in a large southeastern inner-city school district. During the study, the school had an enrollment of 532, which consisted of 99% African American and less than one percent of any other racial group. The gender of the population consisted of 49% male and 51% female. Six percent of the student population had identified disabilities, 77% of the school population received free or reduced lunch. According to the results of a 2007 statewide criterion referenced assessment of first, second, and third grade students at the elementary school were performing commensurate with or above the state average for first and second graders. State averages were 90%, 91%, and 85% for first, second, and third grade respectively, as compared to school averages of 92%, 94%, and 67% for first, second, and third graders.

#### *Measures*

##### *Reading Fluency*

To obtain an estimate of the students' word reading speed, the *Test of Word Reading Efficiency* (TOWRE) Sight Word Efficiency and Phonemic Decoding Efficiency subtests (Torgesen, Wagner, & Rashotte, 1999) were administered. The *Sight Word Efficiency* subtest asks students to name all of the words that they can from a list of words in 45 seconds. The *Phonemic Decoding Efficiency* subtest requires students to pronounce all of the phonetically regular nonwords in a list in 45 seconds. Concurrent validity estimates are reported as having a median of .91 in grades first through third. Alternate form reliabilities have a median coefficient score of .97 in grades first through third. The number of words and non-words read correctly were summed, and this figure was used to compute standard scores.

##### *Reading Achievement*

The WJ-R III (Schrank et al., 2001), a widely used, individually administered achievement test with good evidence for internal consistency ( $r$  exceeds .80 for all subtests) was used to assess reading achievement. A pre- and post-test, consisting of four reading subtests in the WJ-R III was administered two weeks before and the week following the implementation of the intervention. The subtests administered were: (a) letter-word identification, (b) word attack, (c) reading fluency, and (d) passage comprehension. Assessments were counterbalanced across students and administered in a randomized order for both the pre- and post-tests.

#### *Procedure*

##### *Training*

Paraprofessionals were trained during two four-hour training sessions in the elementary school media center by the first and second authors. Training included the *GLR Program* procedures in phonics, sight word/sight phrase, reading stories, and comprehension question procedures. Sessions were conducted in both lecture and role-play format. Training included an overview of the *GLR Program* procedures and a *hands-on* tutorial of how to provide the *GLR Program* instruction with and without comprehension questions. Role-play scenarios included how to correct errors, positively provide feedback, provide praise, record data, and graph data. Paraprofessionals were observed administering sections of the *GLR Program* to each other and practiced all aspects of administration.

##### *Intervention*

Students were randomly assigned to either Treatment one or Treatment two. The four paraprofessionals were randomly assigned to one of the two treatments, thus two paraprofessionals were assigned to each treatment. Once the students were assigned to a treatment, they were then randomly assigned to one of the two paraprofessionals assigned to that treatment. Students in both the Treatment group one and the Treatment group two received intervention twice a week for 10-15 minutes for 15 weeks.

*Treatment one.* The *GLR Program* is a repeated reading method used to increase reading fluency. The *GLR Program* consists of brief instructional activities in phonics, high frequency words, and stories. The phonics section is composed of 16 activities, the high frequency words section is composed of 31

activities, and the stories section is composed of 47 stories. Instruction involved one-on-one instruction between a paraprofessional and each student. Each instructional session lasted approximately ten minutes in length. During the first phase of the intervention, the student completed one phonics activity and one high frequency words activity during each instructional session. During the second phase of the intervention, the student completed one high frequency words activity and one story activity from the stories section. When the student reached phonics activity 16, the phonics sections was phased out and the stories section was introduced as per the program.

*Phonics.* For the phonics section, each student was given one minute to complete the activity with two or fewer errors. Phonics activities included verbally identifying the sound that the grapheme makes. Students were presented with short and long vowels, both upper- and lower-case, as well as consonant sounds to identify. Short words such as *hot, van, cut, yes, fox,* and *jet* also were presented to the student. Each of the 16 phonics activities consisted of between 44 and 48 letters or short words. If the student completed the activity within one minute and made two or fewer errors, a *great leap* was made. A *great leap* signified that the student had mastered the activity and was ready to move on to a progressively more difficult activity. Once a *great leap* was made, the student and paraprofessional graphed the progress, and proceeded to the next activity during the next intervention session. If the student did not complete the activity within 1 minute, or made more than two errors, errors were reviewed, corrective feedback was given, and the activity was repeated during the next intervention session.

*High Frequency Words.* High frequency word activities included pages of decodable words such as *in, is, and, and it;* decodable combinations such as *and, for, at, and had;* sight words such as *the, of, was, and you;* and high frequency phrases such as *in his way, but they said, if we work, and she has been.* Each of the 31 high frequency word activities consisted of between 48 and 60 words. To make a *great leap* on a high frequency word activity, each student had to complete the activity within one minute with two or fewer errors. If the student did not complete the activity within the desired criteria, errors were reviewed, corrective feedback was provided, and the same activity was repeated during the next instructional session.

*Stories.* The stories began with 35 words to be read in one minute and progressed to 169 words to be read in one minute. To make a *great leap* on a story, each student was required to read the story in one minute or less and make two or fewer errors. If the student did not meet the criteria, a *great leap* was not made, errors were reviewed, corrective feedback was given, and the same story was repeated during the next instructional session.

*Treatment Two.* Treatment two was identical to Treatment one with the exception of brief comprehension instruction. Comprehension instruction occurred after a student made a *great leap* on a story. Each student was provided with three oral questions based on the story just read with three possible multiple-choice answers. A graduate research assistant (GRA), who was an elementary teacher with a master's degree in special education, developed the questions. Questions were analyzed by the first three authors for validity. If there was disagreement in the appropriateness of the question or the answer choices, the question was re-worded or the answer choices edited. Each story included two questions related to literal comprehension and one question related to the main idea of the passage.

The comprehension strategy used was a modified version of the Reread-Adapt, and Answer Comprehend strategy (RAAC) by Therrien, Gormley, and Kubina (2006) involving the following steps:

1. The paraprofessional orally read the question and the answer choices
2. The student was allowed 30 seconds to orally select the correct answer
3. If the student did not answer, or did not answer correctly, the paraprofessional would then say, *try again, and look in this line for the answer,* while pointing to where the answer could be found
4. The paraprofessional then orally re-read the question and answer choices
5. If the student still did not answer correctly, or failed to answer, the student was told the correct answer and was asked the next question

The above five steps were written on a *prompt sheet* for the paraprofessionals. After the student made a *great leap* on a story, the student was asked the first comprehension question. If the student answered the question correctly, the correct answer was recorded and the student was then asked the next question. However, if the student incorrectly answered the first question, the student was given the prompt to look in a particular line of the story for the answer (see number three above). If the student



answered the question correctly, the data were recorded, and the student was asked the next question. If the student missed the question with teacher assistance, those data were recorded, and the student was then given the correct answer and shown exactly where the answer was in the story. Once all the questions were asked, a new story was introduced during the next instructional session.

#### *Social Validity*

Paraprofessionals were asked three questions at the completion of the study: 1) Are the goals of the *GLR Program* important for beginning readers? 2) Can first, second, and third graders benefit from one-on-one reading fluency and comprehension instruction? 3) Should the *GLR Program* be implemented on a daily basis?

The first and second author asked students three questions at the completion of the study and recorded their responses: 1) Did the reading program help you read better? 2) Were the reading activities easy or hard? 3) Would you like to keep reading with this program?

#### *Interobserver Reliability and Procedural Fidelity*

Procedural fidelity was conducted on each paraprofessional for 20% of the intervention sessions (Kennedy, 2004). The first author observed the paraprofessional using a fidelity instrument comprised of eight yes/no questions related to each step of the *GLR Program*. Procedural fidelity for the two paraprofessionals in the Treatment group one was 86.9% (range, 83% - 100%). Procedural fidelity for the two paraprofessionals in the Treatment group two was 96.7% (range, 91% - 100%). Overall procedural fidelity was 93.18% (range, 83% - 100%).

Interobserver reliability used the same data collection sheet as the procedural fidelity. The first and second authors each observed the *GLR Program* sessions and recorded their findings. Interobserver reliability of procedural fidelity was conducted on 20% of the above observations. Percentage of agreement ranged from 92.25% to 100% for each session observed. Pre- and post-test data were entered into *SPSS* by the first author. The second author randomly checked 20% of the data entry for accuracy. Accuracy was found to be at 100%.

## **Results**

### *Statistical Analysis*

The Treatment group two received an average of 28.7 instructional sessions, while the Treatment group one received an average of 29.1 instructional sessions. The average number of lessons for the phonics section for the Treatment group one was 12.2 (range, 4- 16) and 13.5 (range, 9-16) for the Treatment group two. These numbers do not necessarily reflect an inequality of instructional sessions, but the highest lesson to which the student progressed. For example, if a student did not make a *great leap* several days in a row, the student would stay on that lesson until a *great leap* was made. The student may have taken five instructional sessions to make one *great leap*. The average number of lessons for the high frequency words section for the Treatment group one was 13.4 (range 0-23) and 15.4 (range 0-25) for the Treatment group two. The average number of lessons for the stories section for the Treatment group one was 7.1 (range 0-12) and 6.4 (range 0-12) for the Treatment group two.

A split-plot ANOVA was conducted to compare pre- to post-test data in the areas of passage comprehension, reading fluency, and broad reading as reported by the *Woodcock Johnson-R III*. In the area of broad reading, the main effect of treatment was statistically significant,  $F(1, 57) = 4.237, p < .05$ . A low effect size (ES) for the treatment main effect of .04 was found. The Treatment group one scored higher on post-test measures than did the group that received Treatment two.

For reading fluency, the main effect of treatment was not statistically significant,  $F(1, 57) = .566, p > .05$ . Effect size for the treatment main effect was low at .12. For passage comprehension, the main effect of treatment was not statistically significant,  $F(1, 57) = 1.141, p > .05$ . Effect size for the treatment main effect was low at .07.

A split-plot ANOVA also was conducted to compare pre- to post-test data in the areas of site word recognition and phonemic decoding. For site word recognition, the main effect of treatment was not statistically significant,  $F(1, 57) = .273, p > .05$ . Effect size for the treatment main effect was low at .01. Similarly, for phonemic decoding the main effect of treatment was not statistically significant,  $F(1, 57) = .298, p > .05$ . Effect size for the treatment main effect was low at .01 (sees Table 2 for means, standard deviations, and overall subtest gains).

**Table 2**  
**Means and Standard Deviations on Pre- and Post-test Measures by Group**

Measure	Pretest		Posttest		Pre- and post-test difference
	M	(SD)	M	(SD)	
<b>WJ-R III Reading Fluency</b>					
Treatment 1	113.03	(9.63)	110.73	(13.01)	-2.30
Treatment 2	111.12	(11.72)	111.52	(7.73)	0.40
<b>WJ-R III Passage Comprehension</b>					
Treatment 1	103.42	(15.41)	104.52	(10.00)	1.10
Treatment 2	104.88	(13.35)	102.16	(11.50)	-2.75
<b>WJ-R III Broad Reading</b>					
Treatment 1	111.00	(11.63)	111.39	(9.75)	0.39
Treatment 2	113.32	(11.20)	111.48	(11.72)	-1.84
<b>TOWRE Site words</b>					
Treatment 1	101.45	(10.85)	107.42	(10.86)	5.97
Treatment 2	101.04	(11.89)	105.46	(14.45)	4.42
<b>TOWRE Phonemic Decoding</b>					
Treatment 1	103.76	(10.29)	104.88	(12.41)	1.12
Treatment 2	101.58	(12.64)	103.58	(13.16)	2.00

Note: WJ-R III = *Woodcock Johnson Test of Achievement*, TOWRE = *Test of Word Reading Efficiency*. Standard Scores. Treatment 1 = Great Leaps Reading; Treatment 2 = Great Leaps Reading plus Comprehension questions

#### *Social Validity*

The results of the three-question social validity survey indicated that all paraprofessionals responded that the goals of the *GLR Program* were very important for beginning readers. They all indicated that they thought first, second, and third grade students could benefit from one-on-one reading fluency and comprehension instruction. When asked if they thought the *GLR Program* should be implemented on a daily basis on a school-wide scale, all paraprofessionals expressed it would be difficult for them to continue to implement the program given their other responsibilities in the school.

During the post-testing, 100% of the students completed the three-question student survey. Ninety-one percent indicated that the program helped them read better. When asked if the reading activities were easy or hard, 76% of the students indicated that the activities were easy. Seventy nine percent of the students indicated that they would like to continue practice reading with the *GLR Program*.

#### **Discussion**

It has been suggested that repeated readings of the same passages can facilitate increased fluency and comprehension. This suggestion is based on the theory of automaticity in reading (LaBerge & Samuels, 1974) that suggests that greater fluency, and therefore automaticity, in reading allows more cognitive resources to be made available to process the meaning of text. It also has been suggested that repeated readings promote the use of various syntactical and morphological cues, and consequently, reading fluency (Mastropieri & Scruggs, 1997). Prior research has suggested that repeated reading increases reading fluency (Therrien 2004), and an increase in reading fluency leads to an increase in reading comprehension (LaBerge & Samuels). It was to our surprise that the implementation of a comprehension strategy appears to have hindered the reading comprehension of the students in our study. One potential shortcoming of the method of repeated readings is that, although it may provide greater fluency in reading, it does not provide information to students regarding how their cognitive resources should be allocated in comprehending text (Mastropieri & Scruggs). These cognitive resources include the use of various syntactical and morphological cues.

We hypothesize that there may be several reasons for the findings of our study. First, at the earliest stages of reading, almost all words are unknown, and therefore, beginning readers concentrate on decoding words. At this point, the content of the text should be familiar so that once a word is decoded; students know the meaning of the word. Some students reach automaticity with a core group of words by the middle of first grade (Hierbert & Fisher, 2005); however many do not. For students who do not develop this automaticity, their lack of speed and accuracy may have been directly related to their decreased ability to comprehend text. The added comprehension instruction may have interrupted students' word- and text-reading skills, which may be more critical to these students development than comprehension strategies.

Contradictory to the findings in the literature surrounding comprehension instruction for young children, our results support the findings of Fuchs and Fuchs (2005). These authors found that the teaching of higher order reading skills such as comprehension may be counterproductive for this

population. It is possible that the activities designed to strengthen reading comprehension actually interrupted reading practice. Young readers may not execute a variety of cognitive processes relevant to the comprehension of text even if they have the cognitive resources available to generate them, such as inferencing, predicting, visualizing, and processing sentence grammar. As suggested by Fuchs and Fuchs, the teaching of higher order reading skills, including those that may appear developmentally appropriate, may be unproductive. Since there were such a high percentage of first grade students in the current study, it is possible that the scores may have been skewed because these young students were not competent in word reading, thus, the addition of the comprehension element inadvertently interrupted reading practice. This suggests that the participants in the current study may not have had the appropriate level of cognitive development needed to successfully comprehend the reading stories (Fuchs & Fuchs, 2005).

#### *Limitations and Future Directions*

Although one group outperformed the other, data should be interpreted with caution. One limitation of the current study is that we the researchers had three questions for each story and each question only had three answer choices. This may have led to students guessing the right answer without fully understanding the passage. Additionally, the length of the stories may have restricted the amount of text needed to answer comprehension questions. Very short stories may lead to insufficient message processing. Many of the stories were short and attempted to use similar consonant or vowel sounds that lead to limited content. Short passages written on a first grade level focus primarily on sounds, and rarely use descriptives, conjunctions, or clauses (Singer & O'Connell, 2003). Descriptives, conjunctions, and clauses are needed for readers to make sense of the text and for text to be read more fluently. Take into consideration the following sentences: *The cat ran after the mouse because the mouse had the cheese* in comparison to the two sentences: *The cat ran after the mouse. The mouse had the cheese*. In the first sentence, the reader is given the literal meaning of the sentence whereas the second example leads the reader to infer why the cat was chasing the mouse. In addition, according to Singer and O'Connell (2003), reading speed and accuracy (and thus fluency) is greatest in the middle of the passage and slowest at the beginning and end of the passage. Because the passages used were of such short length, the students in this study may not have been able to achieve a proper reading speed to glean appropriate information from the text.

Future research should scrutinize the *GLR Program* passages the students were asked to read as well as the questions and answer choices provided to the students. As stated in the discussion section, the reading passages may have been too short, or not have contained appropriate vocabulary from which to glean meaning. Other reading passages should be created that provide appropriate context for elementary readers.

A second limitation was the difference in procedural fidelity between the Treatment one (89.6%) and Treatment two (96.7%) groups. Even though both percentages were both high, it could be hypothesized that the differences could have had an impact on the mean differences in the Treatment one and Treatment group two. Future research should include intermittent procedural review sessions for paraprofessionals.

Last, because of a time limitation, the intervention was only provided over a 15-week period. A longer intervention may have made a significant difference in the outcome of this study (Speece et al., 2003). Future directions should include a longer intervention period to determine if the *GLR Program* plus comprehension is a viable approach to teaching students strategies to comprehend text. Students may have been more successful if they could have received the supplemental reading instruction more than twice a week. This would have provided more time for students to better develop metacognitive strategies needed for effective reading comprehension (Eilers & Pinkly, 2006). We may have seen better results had the intervention been implemented three, even four, times a week for up to a year.

Although the overall results of this study were mixed, it does not negate the notion that there is a need for fluency and comprehension instruction for early elementary age students. These skills are critical in the reading growth of children. Given the importance of students to do well in school, reading fluency and comprehension are skills that are imperative to have as a foundation. Students must be proficient in text and word reading fluency before they can be called upon to use the higher order skills necessary for the complex process of reading comprehension. Future research should continue to investigate the link between reading fluency and reading comprehension to ensure that students are gleaning the full meaning of information that is presented to them in written form.

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