ABSTRACT

REPEATED VERSUS SEQUENTIAL READING: AN ANALYSIS OF FLUENCY AND WORD RETENTION

by Stephanie Elie

This was an exploratory study aimed to compare repeated reading to a reading intervention coined sequential reading. Repeated reading involved reading stories with 100% word overlap, and sequential reading involved reading stories with 70-90% word overlap. The two conditions were compared on fluency retention and retention of individual previously unknown words. Ten elementary-aged children with reading difficulties participated in the study as part of a summer reading program. Results suggest that repeated reading yielded significantly higher fluency and individual word retention over sequential reading. Instructional implications are that repeated reading is important for retention over reading an equivalent amount of different stories with high word overlap.
REPEATED VERSUS SEQUENTIAL READING:  
AN ANALYSIS OF FLUENCY AND WORD RETENTION

A Thesis

Submitted to the
Faculty of Miami University
in partial fulfillment of
the requirements for the degree of
Educational Specialist
Department of Educational Psychology

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2008

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Introduction

It is unsettling that many of the children in the U.S. today have significant difficulties in the area of reading (Perie, Grigg, Donahue, 2005). For 60% of children, learning to read is very challenging and for 20-30% of children reading is the most difficult thing they will do in school (Lyon, 1998). Without effective proactive assessments and interventions many of these children will fall well behind their peers in reading and continue to experience difficulty throughout school.

In 2000, the National Reading Panel published an article with 5 key components of reading that predicts future reading success. Two of these components were fluency and the ability to comprehend. Repeated reading is a researched and proven method to increase fluency, word recognition, and thus comprehension with children who are reading below grade level (Dowhower, 1987; Herman, 1985; Homan, Kleisius, Hite, 1993; National Institute of Child Human Development, 2000; Roshotte & Torgesen, 1985; Samuels, 1979) There are several research studies that report repeated reading increasing fluency within a particular passage, however the results on the generalization of this fluency to novel passages has been less than adequate (Therrien, 2004). With the overwhelming percentage of elementary-aged children who are continuing to struggle in reading, it is imperative that new and improved methods be researched and introduced.

Literature Review

Fluency, Comprehension, and Word Acquisition

Oral reading fluency is defined as the ability to read with speed and word accuracy (National Institute of Child Health and Human Development, 2000; Rashotte and Torgesen, 1985; Samuels, 1979), and it is one of the most reliable indicators of reading competence (Fuch, Fuch, Hosp & Jenkins, 2001; Jenkins, Fuch, Broek, Espin & Deno, 2003; National Institute of Child Health and Human Development, 2000; Samuels, 1979; Tan & Nicholson, 1997). In addition, fluency is highly associated with the ability to comprehend what is being read (Burns et al., 2002; Jenkins et al., 2003; L.S. Fuch, Fuch & Maxwell, 1988). These findings are supported by information processing models, such as the model of automaticity.

The association between fluency and comprehension is supported by LaBerge and Samuel’s (1974) model of automaticity. This theory states that the ability to decode
words rapidly allows the reader more attentional resources to derive meaning from the text. In other words, we have a limited amount of mental energy to consciously attend to stimuli thus, during the act of reading if all attention is being directed toward decoding words, then there is little or no energy left to comprehend what was read. Furthermore, words can become automatic through multiple exposures and practice (Beck, Perfetti & McKeown, 1982), but comprehension of text always requires conscious attention (LaBerge & Samuels, 1974).

With fluency identified as a core component of reading competence one must consider under what conditions a person becomes a fluent reader. Research has found that the ability to read fluently depends largely on the automaticity of word recognition (Berends & Reitsma, 2006; Samuels, 1979). Samuels (1979) discussed the development of word recognition through three levels:

1. The non-accurate stage, the reader has difficulty recognizing words, even when sufficient time is given.

2. The accuracy stage occurs when the reader is able to recognize a word, but attention is required to read it.

3. The automatic stage is when a student can recognize a word without any conscious attention required. The automatic stage is the ultimate goal for any reader, and is necessary for fluent reading to occur.

Children become automatic in their word recognition through practice and multiple exposure to words. A study by Berends and Reitsma (2006) suggested that an orthographic representation of these words is created in the brain thus creating automatic word identification. This study also reported that the effect of word automaticity was only observed with words that readers were exposed to, and not for words that were novel but had similar structures.

Learning to read words in context rather than in isolation has been shown to be a more effective strategy to increase fluency (Jenkins et. al, 2003; National Institute of Child Health and Human Development, 2000; Nicholson, 1991, Tan & Nicholson, 1997). Tan and Nicholson (1997) conducted a study that examined the effectiveness between words practiced in context and words practiced in isolation (on flashcards) on three measures: rate, accuracy and comprehension. The results showed that across all three
measures the phrase-training condition was superior to the flashcard and control condition. What Nicholson (1991) found was that poor readers of all ages, and six and seven year old average readers demonstrated gains in context that were significant. In a second experiment, he found that context mostly benefited poor and average readers as well as the six year olds. Thus, context would appear to be most beneficial to those who are considered poor or average readers, as well as those who may have less practice in reading (six year olds).

As is apparent from the research, word recognition is essential for the critical skill of reading fluency. The bottom line is that a person must be exposed to a word multiple times in context in order for the word to become automatic (Beck, Perfetti, and McKeown, 1982; Berends & Reitsma, 2006; Samuels, 1979), and through this will have more attentional resources to comprehend what they are reading. Repeated reading has been one instructional intervention/strategy used to increase reading fluency and word recognition.

Reading Interventions

Repeated reading. Repeated reading intervention has empirical support to suggest that it increases fluency and word recognition (Dowhower, 1987; Herman, 1985; Homan, Kleisius, Hite, 1993; National Institute of Child Health and Human Development, 2000; Rashotte & Torgesen, 1985; Samuels, 1979). Repeated reading was developed by Samuels (1979) and originally consisted of rereading a passage several times until a certain criterion was reached (85 words per minute). Since then, some researchers have modified these procedures and have individuals read a passage a set number of times (3 or 4), regardless of how many words are read (Homan, Kleisius & Hite, 1993; Mathes & Fuchs, 1993; O'Shea, Sindelar, & O'Shea, 1987; Rashotte & Torgessen, 1985; Young, Bowers & MacKinnon, 1996).

Repeatedly reading stories or passages increases fluency (Dowhower, 1987; Herman, 1985, Martens, 1997; Samuels, 1979; Therrien, 2004). In Samuels (1979) study, it was found that students increased reading rate and decreased word recognition errors by repeatedly reading the same passage. Dowhower (1987) looked at the effect of repeated reading on student's reading rate and word recognition accuracy, and found
that repeated reading provides multiple practice opportunities for words, which is the main reason for the increased fluency within the same passage. This makes logical sense considering that the reader is reading 100% of the same words in the same exact context. Repeated reading can increase fluency within a passage, however an important, and overall unanswered question is whether the fluency gains transfer over to novel passages. Some studies have found transfer effects (Herman, 1985; Samuels, 1979; Therrien, 2004), and others have not (Kuhn & Stahl, 2003). Therrien (2004) found a moderate mean effect size ($ES=.50$) for fluency across new passages, and concluded that repeated reading has the potential to improve students’ overall reading fluency on new passages, but the results were not overwhelmingly conclusive. Ardoin, McCall & Klubuik (2007) found moderate results on fluency as well, with half of the students in the study increasing fluency across generalization passages with high word overlap from passages that were practiced.

Criticisms of repeated reading. Not all research on repeated readings is encouraging. According to Kuhn and Stahl’s (2003) meta-analysis the effectiveness of repeated reading has had mixed success, and overall repeated reading did not show significance over a control group. In studies that utilized a control group it was found that in eight comparisons the repeated reading groups performed significantly better than the control group, and in 21 comparisons the repeated readings groups did not perform significantly better than a control group (Kuhn & Stahl, 2003). 

In addition, some have criticized repeated reading suggesting that it is monotonous, and that students are unable to experience a diverse exposure to different genres of literature (Homan et. al. 1993). As a result of this discontent, there has been some research conducted on alternative methods of increasing fluency.

Alternatives to Repeated Reading. One strategy, nonrepetitive reading, has been researched and considered as an effective alternative to repeated reading in increasing oral reading fluency (Homan et al., 1993; Rashotte & Torgesen, 1985). One focus of this research area is teasing out the components that are necessary to increase fluency. Some outcomes of this research are that variables such as time spent reading and amount of word overlap across passages contribute to fluency over and above that of just rereading a passage. (Homan, Klesius, & Hiite 1993; Rashotte & Torgesen, 1985).

Rashotte and Torgesen’s (1985) study found that increases in fluency depended
upon the degree of word overlap of passages. That is, the more overlap across passages the faster the students were able to read. The three conditions in this study varied in the amount of word overlap of passages, and words correct per minute was used as a dependent variable. Condition 1 had passages with minimal word overlap between them and the students repeatedly read each passage for a total of 44 readings. In Condition 2 the students repeatedly read passages in which the word overlap was high between each passage for a total of 44 readings. Finally, in Condition 3 students read a total of 44 passages with minimal word overlap, one time each.

Results of this study asserted that there were differences among the conditions on within-session changes in fluency, as well as between-session changes in fluency. First, the mean speed gains within the same passages in Condition 1 and Condition 2 were significantly greater than those in Condition 3. Thus, the amount of word overlap among passages impacted a student’s fluency from the first reading to the fourth reading. Second, it was found that increases between sessions was significant only for Condition 2, which had high word overlap among all the passages.

Purpose of Current Study

There are essential skills that a reader must have in order to become an effective reader. Some of these skills include the ability to automatically decode words, to read fluently, and to be able to generalize these skills to all instances of reading. The importance of these skills is emphasized by the fact that fluent readers have more mental resources for comprehension.

Repeated reading is an intervention that has proven to be an effective strategy to increase word recognition and oral reading fluency. It has been proven to work for individuals of varying abilities and ages. However, when one considers the limitations of repeatedly reading the same passage it seems that additional interventions are needed that would provide the same benefit.

One of the key elements of this study is that it looked at retention of words across time, rather than just the immediate instructional effects. The literature is mixed on the efficacy of repeated reading when compared with other types of reading methods, and there is a need for more research to be done on alternative ways to increase word recognition and fluency.
In the current study, sequential reading of similar passages was compared to repeatedly reading the same exact passage. Sequential reading was defined as simply reading four passages, one time each that had 70-90% of the same words. Thus, the total amount of reading was the same for both conditions; only the repetitive versus non-repetitive component was different.

This was an exploratory study designed to compare sequential reading and repeated reading to determine which produces higher generalization of word retention and fluency, over a period of time. Specifically, this study examined two questions:

1. Do students read more fluently, as measured by CWPM, in the repeated reading condition or sequential reading condition over time?

2. Do students retain more previously unknown words, in the repeated reading or sequential reading condition, over time?

Method

Participants

Participants included six male and four female children (N=10) entering third grade (n= 9) and fourth grade (n=1) from a rural school district in Southwest, Ohio. All students were recruited from a local summer reading program. Participation in the summer program was based on (a) recommendations from the child’s reading teacher, in collaboration with the Title I Coordinator and school psychologist for children who had reading difficulties and (b) parental consent.

Nine participants in this program were referred due to reading difficulties, and one child with average reading skills was referred due to challenging behaviors. Each child’s reading level was assessed and it was determined whether they read at frustration, instructional or independent level in grade level materials. The results of this assessment revealed that eight of the students read at the frustration level in grade level material, one at instructional, and one at the independent level.

Informed consent was obtained for each child from the parent or legal guardian before any data were collected. This study was incorporated as part of the summer program, thus consent for the summer program encompassed consent for this study.
Setting

The location of the summer program was in a modular outside of a local high school in Southwest, Ohio. There were two classrooms within the modular that were connected by a door. Both rooms were used for the summer program, with specific areas designated for instruction, independent reading, snacks, and the "school store". Each examiner used a secluded area in one of the modular rooms, or one of the available rooms in the high school, to conduct all reading sessions.

All reading passages were kept in cubbies in the corner of one of the modular rooms. Passages were organized by condition (repeated reading, sequential reading) with each condition occupying one row and each passage set occupying one cubbyhole. This set-up allowed for easy access of passages by examiners, and randomization of passage administration.

Examiners/Training

The examiners in this study were 11 second-year school psychology graduate students, all of whom had extensive experience in the administration of curriculum-based reading measures. Through previous class work and tutoring experiences, each examiner had training on how to administer and score CBM reading. In addition, all were trained in the administration of the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) measures, a formative reading measure that is individually administered and measures phonological awareness, fluency, and alphabetic understanding.

Training for the current study consisted of explanation and modeling of procedures, as well as practice and feedback. One week before the summer reading program started, a half-day training session was held in which 45-minutes were devoted to reviewing the procedures of the current study. At the beginning of the 45-minutes, each examiner received copies of the Treatment Fidelity Checklist (Appendix A), a script, and data collection sheets. The rest of the time was devoted to teaching the steps on how to administer the intervention using the aforementioned paperwork. The researcher modeled how to administer each passage set and then each examiner was given a reading probe and practiced administering one probe from each condition. While the graduate students practiced, feedback was provided by the researcher on individual performance.
Materials

Creation and composition of passages. The eight original story passages used in the current study were created by School Psychology graduate students at Miami University as part of a class requirement. At that time, instructions were provided to all students on how to create passages in order to foster consistency. All stories used in the study contained between 150-200 words, and were within either 3rd or 4th grade reading level. Each individual story had two copies, one for the child and one for the scorer. Every child’s copy of the story had the grade level difficulty recorded on the bottom right-hand corner of the sheet. Every scorer copy included the cumulative number of words at each line flush on the right-hand side, and also Flesch-Kincaid readability statistics (grade-level and reading ease) recorded on the bottom right-hand side.

For each original story, three generalization passages were created. Each generalization passage was designed to have high overlap of words with the original, but arranged as a different story/sentence structure. Specifically, each generalization passage had between 50-70% of exactly matched words and 70-90% overlap of words with the original passage. A match was defined as a word unit in the generalization passage that matched a word unit in the original. In other words, if the word “and” occurred 4 times in the generalization passage, and 2 times in the original, the match was 50%. Match was defined as the percentage of the cumulative words in the generalization passage that had a corresponding match to the original passage.

Overlap was a less conservative statistic, and reflected the percentage of cumulative words in the generalization passage that appeared one or more times in the original passage. For example, if the word “and” occurred 4 times in the generalization passage, and 3 times in the original, the overlap was 100%. In other words, each occurrence of “and” was counted as an overlap.

For seven of the eight original stories, a complete set of four passages (1 original, 3 generalization) was created. Other materials used in this study included a stopwatch, tape recorder, audiotapes, treatment fidelity checklists, and writing utensils. A binder with all of these materials was put together for each individual graduate student with all the materials inside to use for the duration of the data collection.
**Dependent Measures**

Two dependent measures were examined: fluency retention and individual word retention. Both measures were collected on a single reading of an original passage, 24 hours after intervention had been administered in that passage. Thus, both measures represented 24 hours retention of intervention effects. Fluency retention was calculated by computing the total number of correct words per minute (CWPM) and the total number of errors per minute (EPM) on the passage. In order to obtain the most accurate estimate, the CWPM and EPM were measured for the entire passage, rather than just the first minute. The formula used to calculate total CWPM and EPM was adopted from Shapiro and Kratochwill (2000): the number of words read correctly divided by the number of seconds elapsed, multiplied by 60. For example, if the child read a 210-word passage in 180 seconds, her fluency retention score would be 70 CWPM.

The second dependent measure was individual word retention. Individual word retention was defined as the number of words read correctly that had been previously counted as an error on the first reading of a passage, 24 hours earlier. The purpose of this measure was to determine how many words were learned through the repeated reading of the same passage or the sequential reading of similar passages. Retention was calculated through a systematic process in which all errors on the first reading of a story were highlighted, and then those same words were highlighted on the child’s reading 24 hours later. The total number of highlighted words read correctly were defined as “gross words retained.”

Gross retention was adjusted, however, because it was also possible that the child may commit errors on words read correctly 24 hours earlier. Thus, net retention of words 24 hours later was ultimately calculated by subtracting the words “lost” from the words “gained.”

**Experimental Conditions**

There were two conditions in the study: Repeated reading and sequential reading. Each of the experimental conditions was applied to a new original passage each day, for four days. Each condition was evaluated by administering the original passage, 24 hours later, to determine fluency and word retention.
Repeated reading. In this condition, the child read the original story four times. An repeated reading passage set included one child’s copy and four scorer copies (for example see Appendix B).

Sequential reading. In this condition, the child read the original story and three “generalization” stories that contained high match and overlap with the original. A sequential reading passage set included one child copy per story, and one scorer copy per story (for example see Appendix C).

Procedures

At the beginning of the summer program each child was assigned to one graduate student, with the exception of one child who was assigned to two graduate students. The graduate student was responsible for their child throughout the day including during transition times, during free time and during individual intervention times. This structure also provided consistency for each child and allowed for consistency of delivering interventions.

The same sequence of steps was followed for all reading conditions and during all reading sessions. Before each reading the examiner would give the oral reading fluency directions to the student. These directions were: (point to first word) When I say start begin reading aloud at the top of this page. Try to read each word. If you come to a word you don't know, I will give it to you. Be sure to do your best reading. Ready. Go. Immediate error correction was provided to the student during each reading. A student was told a word if they (a) hesitated for 3 seconds, (b) omitted a word, or (c) mispronounced a word. The student read the entire passage while being timed. After a student read the last word the total time was recorded. After each reading session the examiner recorded the correct words per minute and the number of errors for each passage. Each examiner recorded the first and last reading of each session for inter-scorer agreement. In addition, each graduate student had access to a treatment fidelity checklist of steps and were expected to use them during each reading session.

At the beginning of the first session each pair of graduate students and children found a quiet location. The first five minutes of this session were spent explaining to the child what they would be doing during the designated reading times. Specifically, it was explained to each child that during the reading times they would be reading stories out loud while the graduate student listened. Some of the stories they would read multiple
times, and other stories they would read one time each. They were also informed that some of their readings would be tape-recorded. At this time each child had to provide assent in order to continue with the readings.

After children provided assent, the graduate students were instructed to go ahead with the first condition, which was the repeated reading condition for all children, using the same passage (The Train). The reason for beginning the evaluation with the same condition and passage was to provide a standardized measure of pre-treatment performance across all children. On the same day, during the second reading session, the SR conditions were applied to a second, randomly selected passage.

During the second day of data collection, each child was administered the original passage from the repeated reading and sequential reading conditions conducted one day (24 hours) earlier. Oral reading fluency and word retention during this “maintenance” reading was used to evaluate and compare the effectiveness of the two interventions. Once the child finished reading the two passages, the next trial began. During the second trial, two novel passages, randomly selected, were used for the repeated reading and sequential reading conditions.

With the exception of the first and final day, data collection consisted of two maintenance readings, then the administration of one repeated reading and sequential reading passage. By the fourth day, all eight passage sets were exhausted, and four repeated reading and four sequential conditions were completed.

The fifth and final day of data collection consisted of only the two maintenance readings for the repeated reading and sequential reading conditions one day earlier. After the final readings, the graduate student gave each of their children a reading preference assessment to determine which condition they preferred. Each graduate student was given a sheet that included instructions on what to say, three choices for the child to circle, and a place for narrative response to the question. Each graduate student said to the child, “At the beginning of each of our reading sessions, I told you when you were going to read one story four times, and when you were going to read four different stories. Which one did you like better?” The child could choose between reading one story four times, reading four different stories, or none/I did not like any. Then the graduate student said, “Why would you rather (insert choice from above)?”
Experimental Design

An alternating treatment design (Kazdin, 1982) was used to examine the effects of the two conditions on CWPM and net retention of words. This type of design is used to ascertain the comparative effects of two treatments, and visual inspection of trends and level were used to compare the competing strategies. For all children, the conditions were delivered according to a counterbalanced schedule (e.g. RR-SR; SR-RR; RR-SR; SR-RR). An example of a student’s schedule can be seen in Appendix D.

Inter-scorer Agreement

Inter-scorer agreement of CWPM and EPM were calculated for at least 20% of the stories from each condition for each child. During data collection, each graduate student audio recorded the first and last reading for each reading session, making a total of eight recorded readings for each of the three conditions. The researcher scored randomly selected passages for inter-scorer agreement of all students except the one student the researcher worked with; another examiner scored this one.

Two randomly selected stories were selected from each condition for each child. For each story selected, the audiotaped reading was timed and scored on a new score sheet. All procedures for scoring timing were the same as they were during data collection. After listening to the tape and scoring each story, inter-scorer agreement was calculated. This was done by taking the CWPM and the EPM scores for both scored stories, and dividing the lower number by the higher number. For example, if one person scored a child’s reading as 50 CWPM and another as 48 CWPM, then 48 was divided by 50. The mean inter-scorer agreement across all children was 96%, with a range of 91-99%.

Results

The two dependent variables, total correct words per minute and net retention of words, were compared using visual analysis, with supplemental t-tests to evaluate group differences.

Preliminary Analysis

A preliminary analysis was conducted to rule out whether differences between the experimental conditions were due to differences in passage difficulty. To some extent, passage difficulty was controlled by using passages that were at the designated reading level, according to Flesch-Kincaid. However, readability statistics do not take into
account all factors. The mean CWPM and EPM of the first reading of each story set were calculated in order to compare the difficulty level of passages across conditions. Only the first reading was used to address difficulty level because this was the only reading during which no instruction occurred. A significant difference was found between the repeated reading condition and sequential reading condition. A paired sample T-test indicated that there was a significant difference between the first readings within repeated reading and sequential reading than would be expected by chance, t(9) = -3.794, p < .004. Visual analysis (Figure 1) illustrate these differences, revealing that the mean CWPM during sequential reading was consistently higher than the repeated reading condition, particularly for the first two sessions. Specifically, the mean CWPM on the first reading during the sequential reading condition (59.8 CWPM) was higher than the repeated reading condition (53.5 CWPM). There was no significant difference found between errors per minute during the repeated reading (M=4.67) and SR (M= 4.44) conditions. The preliminary analyses indicated that repeated reading passages were somewhat more difficult than sequential reading passages and produced a mean fluency rate that was significantly lower. Thus, any differences between conditions might be attributed to the difficulty of these passages, rather than the experimental conditions. Differences between repeated reading and sequential reading were examined, however, due to two factors. First, the significant difference in passage difficulty appeared to be due only to the first trial, which incorporated the same repeated reading passage set and story for all children. The passage selected for this initial trial was a poor choice, although it was selected randomly from among the eight original stories. Thus, differences between conditions observed during the remaining trials were unaffected. Second, errors per minute were relatively similar, and thus opportunities for net word retention were similar across both conditions.

Fluency

The retention of fluency was measured by calculating the CWPM and EPM on all original stories administered 24 hours after intervention. At maintenance, the repeated reading condition and sequential reading condition were compared using statistical analysis, visual analysis and comparison of means. Statistical analysis indicated that the retention of CWPM between the two conditions was significantly different, and is more than would be expected by chance, t(9)= 3.535, p < .006. Visual analysis indicated that
the repeated reading maintenance stories yielded significantly higher CWPM than the sequential reading stories (Figure 2). A trend was observed across sessions with repeated reading CWPM scores consistently above sequential reading CWPM scores, with larger differences for the third, fourth, and fifth sessions. The mean CWPM for the repeated reading condition (79.2) was higher than CWPM in the sequential reading condition (70.32). There was no significant difference found in EPM at maintenance between repeated reading (3.24 EPM) and sequential reading (4.40), although this difference approached significance.

Net Retention of Words

The mean net retention of words across all four sessions was calculated for each child (Table 1). All students except Coby retained more words in the repeated reading condition. Statistical analysis, using a paired-sample t-test, indicated a significant difference of net word retention between repeated reading and sequential reading $t(9) = 2.398, p < .04$. Visual analysis of the mean net retention across sessions reveals a higher net retention for the repeated reading condition as compared to the sequential reading condition (Figure 3). Visual analysis reveals a downward trend in the repeated reading condition data and a slight upward trend in the sequential reading condition data across sessions, making each data point progressively closer in each condition. The mean net retention of words in each condition was significantly different, with the repeated reading condition at a mean of 8.175 and SR at 4.225.

Social Validity

The children in the study were asked which type of reading they preferred: “reading one story four times,” “reading four different stories,” or “none of the above.” Five of the children indicated that they liked reading four different stories, two choose they would rather read one story four times and three choose none of the above. One child wrote, “I like reading different stories because then I won’t have to read it over and over and over...” Another wrote, “Because new stories are better than the same over and over again. We need to know about different stories.” One child wrote that he or she preferred repeated reading “because I get used to it, and it doesn’t change or get harder.”

Discussion

Reading interventions are tools that school psychologists and other professionals use to help children improve their reading ability. As professionals, it is our ethical
REPEATED VS. SEQUENTIAL

responsibility to provide interventions that are evidence-based and have a measurable positive impact on reading ability. Repeated reading is one reading intervention that has been proven in research to increase reading fluency, which is one of the five key reading skills according to the National Reading Panel (2000). However, it is not yet clear if the fluency gains that are seen during intervention generalize over time or carry over to novel passages (Therrien, 2004). This study aimed to explore how an alternative reading strategy compared to repeated reading in the areas of fluency retention and individual word retention.

Repeated Reading vs. Sequential Reading

In the current study, group visual and statistical analysis showed that repeatedly reading the same story four times yielded higher fluency retention than reading four different stories with high word overlap. Therrien’s (2004) meta-analysis of reading fluency pointed to repeated reading as an intervention capable of improving fluency in novel passages, as did Samuel’s (1979) classic repeated reading study. The findings of the current study suggest that repeatedly reading the same story (100% word and context overlap) had long-term fluency benefits over reading an equivalent number of stories with high word overlap, but little context overlap. In light of the research in this area, the findings of the current study are aligned with previous research studies such as the two listed above.

Repeated reading showed superior effects over sequential reading in the acquisition and retention of individual, previously unknown words. The overall mean was higher for the repeated reading condition across all four sessions, which demonstrated that the children retained the knowledge of how to read a previously unknown word, and made less new errors on a maintenance story in that condition. Individual visual analysis indicated that nine of the ten children were able to retain more words when repeatedly reading the same story.

Automatic word recognition is an essential skill for increased fluency and how students best learn automatic word recognition has been the topic of research (Nicholson, 1991). It has been hypothesized that teaching words in isolation, such as through flashcards or wordlists would translate to increased reading fluency and thus better reading comprehension. A study conducted by Jenkins et al. (2000) examined the ability of fourth grade students to answer comprehension questions after reading an intact text or
after reading a list of random words from the same text. What the study indicated is that fluency with the text accounted for a substantial amount of variance in comprehension. What some research found was that learning words in isolation did not translate to increase reading fluency. Having students read word in context is more likely to translate to increased fluency (Fleisher, Jenkins, Pany, 1979). This study takes that assertion even farther and suggests that repeated exposure to words in the exact same context is more effective than an equal number of exposures in different contexts.

Limitations

A significant difference was found in the difficulty of passages in the repeated reading condition and sequential reading condition. Analyses of CWPM on the first readings indicated that the repeated reading stories were more difficult due to the CWPM being consistently and significantly lower. This difference was unexpected because all stories were written to be of similar difficulty in order to control for this variable, and each story was randomly picked for each session. This created one confounding variable that may have influenced the outcome of the data. However, the data indicated that the repeated reading passages were more difficult on average, and repeated reading was found to be the more effective reading intervention. If the results had come out opposite, the level of story difficulty would have more of a concern.

A second issue is that the children were asked to read the entire story, which may have influenced the fluency scores. To measure word retention it was essential that the entire passage be read, especially for the sequential reading conditions in order to make sure students had equal exposure to words in both conditions. One downfall to this method is that there may have been a fatigue factor that brought down the fluency scores, especially for the sequential reading stories.

A third limitation is that no control condition was included. This study was developed to compare two different types of reading interventions; one that is heavily researched based, and one that was developed for this study and thus has no specific empirical evidence. Since there was no control group it is impossible to know if the sequential reading condition is beneficial for fluency or word retention when compared to a control group. The lack of a baseline also makes it difficult to conclude if the sequential reading intervention had any measurable positive impact on reading. Research does show that frequent exposure to print and reading is beneficial in increasing reading
ability, especially at a young age. This information suggests that it is likely the children benefited from reading the sequential stories; it just was not directly measured in this study.

Finally, the children were exposed to only four trials of each condition, which is far less time and amount of exposure typically associated with supplemental reading intervention. More effects or a different pattern may have been observed if the study was carried out over more sessions. The limited number of sessions did not allow for an extended analysis of retention or of how the two conditions would fare over time.

*Instructional Implications/Future Research*

Empirical evidence has shown time and time again that repeated reading interventions are effective for increasing reading fluency and thus comprehension. The current study aimed to explore an alternative to repeated reading that would deliver the same amount of reading, without repetition. In terms of fluency and word retention, the repetitive reading associated with repeated reading lead to more favorable outcomes. Using oral repeated reading as a reading intervention in schools is a feasible option, due to its simplicity and link to developmental reading theories (Dowhower, 1987; Marten, 1997; National Institute of Human Development, 2000; Samuels, 1979).

When teachers are teaching new vocabulary words or new words in general it may be more beneficial to teach them in the context of a story rather than in isolation. Having students use flashcards, or memorize discrete lists of words will not necessarily translate to fluent reading. In the same vein, allowing students to read and re-read stories that include many unknown words will allow them to learn the word and most likely retain that information. Repetition has been proven to benefit struggling readers and the most beneficial outcomes have been found when that repetition is within the context of a story or narrative.
References


Appendix A: Treatment Fidelity Checklist

Fidelity Checklist for
REPEATED READING & SEQUENTIAL READING

Session No. _______  Date: ____________
Examiner: ________________  Child: ________________

---

REPEATED READING

Passage name: ______________________

First Reading (RECORD)
Fluency instructions ______
Total CWPM: _______  Total EPM: _______  Total time: ______
IOA: ______  Total CWPM: _______  Total EPM: _______

Second Reading
Fluency instructions: ______
Total CWPM: _______  Total EPM: _______  Total time: ______

Third Reading
Fluency instructions: ______
Total CWPM: _______  Total EPM: _______  Total time: ______

Fourth Reading (RECORD)
Fluency instructions: ______
Total CWPM: _______  Total EPM: _______  Total time: ______
IOA: ______  Total CWPM: _______  Total EPM: _______

---

SEQUENTIAL READING

Passage name: ______________________

Original Passage (RECORD)
Fluency instructions ______
Total CWPM: _______  Total EPM: _______  Total time: ______
IOA: ______  Total CWPM: _______  Total EPM: _______

Second Passage
Fluency instructions: ______
Total CWPM: _______  Total EPM: _______  Total time: ______

Third Passage
Fluency instructions: ______
Total CWPM: _______  Total EPM: _______  Total time: ______

---

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Fourth Passage (RECORD)
Fluency instructions: ______
Total CWPM: ________ Total EPM: ________ Total time: ________
IOA: ______ Total CWPM: ______ Total EPM: ______

Fidelity Checklist for MAINTENANCE
Session No. ______ Date: ________________
Child: __________________________
Examiner: ______________________

Maintenance condition (RECORD)
Passage administered first? Circle one: RR SR

Administer oral reading fluency instructions_____
Record reading: ______
RR passage name: ____________________ CWPM: ________ EPM: ________
Gross ACQ: ________ Net ACQ: ________
IOA: ______ Total CWPM: ______ Total EPM: ______

Administer oral reading fluency instructions_____
Record reading ______
SR passage name: ____________________ CWPM: ________ EPM: ________
% Gross ACQ: ________ % Net ACQ: ________
Total CWPM: ______ Total EPM: ______
Appendix B: Example of Repeated Reading Passage with Child Passage and Scorer Passage

Matt and His Homework

Matt knows that homework is not fun. But his mom said he must sit in the kitchen and finish all of it. Today he has to work on sums and differences. Why must his teacher use big words like sums and differences instead of saying adding and subtracting?

His mom says that if he does well in school he will succeed in life. He knows that she is right, but he is still bored. Matt starts to think about what he will be when he grows up.

He has big dreams about his life. He is filled with ideas about what he wants to be. Maybe he will be a builder. Builders know how to use materials and how to use math to build houses. He could even build a new house for his mom to thank her for making him do his homework!

Matt finally decides to start his math homework. If he wants to be a builder he will have to do his homework every night.
Matt and His Homework

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His mom says that if he does well in school, he will succeed in life. He knows that she is right, but he is still bored. Matt starts to think about what he will be when he grows up.

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Matt finally decides to start his math homework. If he wants to be a builder he will have to do his homework every night.
Appendix C: Example of Sequential Reading Passage Set with Child Copy and
Scorer Copy for Each Story

Animal Homes

Squirrels move to different homes throughout the year. A particular type of squirrel, known as a grey squirrel, builds a winter home in a hollow tree. She covers her hole with moss, grass, and leaves. She stores some food to eat too. It is safe and warm to stay there through the snow and winds of the cold weather outside.

In the spring, safe in her cozy nest, the mother squirrel gives birth to five little babies. They have no fur and their eyes are closed. After a little while they open their eyes and their fur turns brown.

When the babies are too big for their hole, they find and move to a summer home. It looks like an extra large ball of dead leaves high in the tree. A squirrel builds home using sticks and leaves. Inside there is a spongy floor of moss. It is a good home for the squirrel family.
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When/100 the babies are too big for their hole, they find and move to a summer home. It looks like an extra large ball of dead leaves high in the tree. A squirrel builds home using sticks and leaves. Inside there is a spongy floor of moss. It is a good home for the squirrel family.

Animal Homes

Word Count: 155
Sentences Per Paragraph: 4.3
Words Per Sentence: 11.9
Characters per word: 4.1

Passive Sentences: 0%
Flesch Reading Ease: 91.5
Flesch-Kincaid Grade Level: 3.4
Animals in Winter

When the weather gets cold and the leaves turn brown and fall off the trees this means that winter is coming soon. Once winter starts snow covers the ground. People stay inside in cozy and safe houses and wear fur coats outside. People also have lots of food to eat throughout the winter. But what happen to the animals?

There is little food in the winter for animals. So all the animals including the squirrels, mice and beavers find extra food in the fall. They store it to eat in winter. Rabbits and deer look for moss and leaves in the winter.

Animals find winter homes in hollow holes in trees or logs, under rocks or leaves. Some mice build home under the snow. Squirrels and mice may stay close together. It is safe and warm this way.

Water is a good home for animals during the wintertime. Some animals move into lakes and ponds. Many fish hide under rocks and spongy dead leaves in the ponds. They may even make holes as their home in the mud.

Animals struggle through the winter, but soon spring comes. Then there is more food and places for animals to go.
Animals in Winter

When the weather gets cold and the leaves turn brown and fall off the trees this means that winter is coming soon. Once winter starts snow covers the ground. People stay inside in cozy and safe house and wear fur coats outside. People also have lots of food to eat throughout the winter. But what happens to the animals?

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Animals find winter homes in hollow holes in trees or logs, under rocks or leaves. Some mice build home under the snow. Squirrels and mice may stay close together. It is safe and warm this way.

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Animals struggle through the winter, but soon spring comes. Then there is more food and places for animals to go.

Animal Homes (Generalization 1)
Grade: 3.7 Match: 65% Overlap: 77%
Home in the Woods

Mary and John have a home in the woods. They like to spend time there during the spring to go hiking and to watch squirrels. Mary’s favorite squirrel is the grey squirrel because it is pretty.

During the spring, Mary and Jon traveled to their home and brought lots of food to eat. When they arrive they store their food in a safe and covered place. After a while they decide to go on a hike. The weather is perfect. There is green grass, moss and leaves everywhere.

On the hike they see many interesting things. They find a hollow tree that has a large hole. There is a bird nest inside. The nest has five little babies in it. They see lots of squirrels running through the woods. Many of the squirrels have brown fur and black eyes. Mary looks for a grey squirrel, but does not see one. She also does not see any squirrel homes.

Mary and Jon had a nice hike. They decide to go back to their home because it is no longer warm outside and it is becoming windy. They cannot wait to go hiking tomorrow.
Home in the Woods

Mary and John have a home in the woods. They like to spend time there during the spring to go hiking and to watch squirrels. Mary’s favorite squirrel is the grey squirrel because it is pretty.

During the spring, Mary and Jon traveled to their home and brought lots of food to eat. When they arrive they store their food in a safe and covered place. After a while they decide to go on a hike. The weather is perfect. There is green grass, moss and leaves everywhere.

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Mary and Jon had a nice hike. They decide to go back to their home because it is no longer warm outside and it is becoming windy. They cannot wait to go hiking tomorrow.

Animal Homes (Generalization 2)

Grade level 3.4 Match: 56% Overlap: 70%
The Missing Babies

Once there was a grey squirrel, and she had lost her babies. She looked in different homes to try and find them. First, she looked in a bird’s nest, and she found five little babies. These babies had no fur and their eyes were closed. Her babies, however, had brown fur and open eyes. These were bird babies! She decided to move to another home and keep looking.

The squirrel mother came to a hollow tree. This was an owl’s tree home. She looked under moss, grass, and leaves in the hole, and she found food. There were no babies there. She started to worry, because winter was on the way. The squirrel mother wanted her babies to be safe through the wind and snow of the cold winter.

Next, she looked in a hole in the forest floor, which was a mole’s home. She saw a large ball of sticks and dead leaves. Underneath the dead leaves, there was spongy moss on the floor. The squirrel mother lifted the moss, and her babies were there! The baby squirrels had been safe in the moss the entire time, but the blind mole did not see them. Now her squirrel family was safe, and they could all go home to their own cozy nest!
The Missing Babies

Once there was a grey squirrel, and she had lost her babies. She looked in different homes to try and find them. First, she looked in a bird’s nest, and she found five little babies. These babies had no fur and their eyes were closed. Her babies, however, had brown fur and open eyes. These were bird babies! She decided to move to another home and keep looking.

The squirrel mother came to a hollow tree. This was an owl’s tree home. She looked under moss, grass, and leaves in the hole, and she found food. There were no babies/100 there. She started to worry, because winter was on the way. The squirrel mother wanted her babies to be safe through the wind and snow of the cold winter.

Next, she looked in a hole in the forest floor, which was a mole’s home. She saw a large ball of sticks and dead leaves. Underneath the dead leaves, there was spongy moss on the floor. The squirrel mother lifted the moss, and her babies were there! The baby squirrels had been safe in the moss the entire time, but the blind mole did not see them. Now her squirrel family was safe, and they could all go home to their own cozy nest!

Animal Homes (Generalization 3)
Grade level: 3.2
Match: 52% Overlap: 70%
### Appendix D: Sample Student Schedule

<table>
<thead>
<tr>
<th>Days</th>
<th>Condition Order</th>
<th>RR Passage</th>
<th>SR Passage</th>
<th>Maintenance Passage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reading 1: RR</td>
<td>The Car</td>
<td>Amy’s Purse</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Reading 2: SR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Reading 1: M, SR</td>
<td>Wintertime</td>
<td>The Chicken</td>
<td>The Car</td>
</tr>
<tr>
<td></td>
<td>Reading 2: RR</td>
<td></td>
<td></td>
<td>Amy’s Purse</td>
</tr>
<tr>
<td>3</td>
<td>Reading 1: M, RR</td>
<td>Dark Path</td>
<td>Animals</td>
<td>Wintertime</td>
</tr>
<tr>
<td></td>
<td>Reading 2: SR</td>
<td></td>
<td></td>
<td>The Chicken</td>
</tr>
<tr>
<td>4</td>
<td>Reading 1: M, SR</td>
<td>Matt’s</td>
<td>Old Box</td>
<td>Dark Path</td>
</tr>
<tr>
<td></td>
<td>Reading 2: RR</td>
<td>Home</td>
<td></td>
<td>Old Box</td>
</tr>
<tr>
<td>5</td>
<td>Reading 1: M</td>
<td>N/A</td>
<td>N/A</td>
<td>Matt’s Home</td>
</tr>
<tr>
<td></td>
<td>Reading 2: N/A</td>
<td></td>
<td></td>
<td>Old Box</td>
</tr>
</tbody>
</table>
Table 1

Mean Net Retention of Words Across Conditions and Students

<table>
<thead>
<tr>
<th>Student</th>
<th>Repeated Reading</th>
<th>Sequential Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amy</td>
<td>16</td>
<td>9.75</td>
</tr>
<tr>
<td>Stephanie</td>
<td>3.25</td>
<td>-.5</td>
</tr>
<tr>
<td>Cathy</td>
<td>11.25</td>
<td>9</td>
</tr>
<tr>
<td>Tom</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Mike</td>
<td>6.75</td>
<td>5.5</td>
</tr>
<tr>
<td>Gage</td>
<td>6.25</td>
<td>4.25</td>
</tr>
<tr>
<td>Lauren</td>
<td>13.25</td>
<td>-2.5</td>
</tr>
<tr>
<td>Coby</td>
<td>-2.25</td>
<td>2.5</td>
</tr>
<tr>
<td>Seth</td>
<td>12.25</td>
<td>7.25</td>
</tr>
<tr>
<td>Kurt</td>
<td>12.5</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>8.5</td>
<td>4.2</td>
</tr>
</tbody>
</table>
Figure 1: Mean CWPM on First Reading Across RR and SR Condition

Figure 2: Total Mean Fluency on Maintenance Reading
Figure 3: Mean Net Retention of Words Across Sessions

Mean Net Retention Across Sessions

Repeated Reading

Sequential Reading

Sessions