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The effects of repeated reading instruction on recall of text of elementary students academically at-risk

Sweeney, William James, Ph.D.

The Ohio State University, 1992

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THE EFFECTS OF REPEATED READING INSTRUCTION ON RECALL OF TEXT OF ELEMENTARY STUDENTS ACADEMICALLY AT-RISK

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

By

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* * * * * * * * * *

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1992

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Each child has something to
    teach us,
A reason to remember
    why we are here.

This document is dedicated to my parents,
    Bill and Gail Sweeney,
whose love, support, and understanding has meant
    so much to me through the years.
ACKNOWLEDGMENTS

I express appreciation to the members of my committee: Dr. Sandra E. McCormick, Dr. John W. Eshleman, and especially to my adviser, Dr. John O. Cooper for their encouragement and support throughout my doctoral program.

A special thanks goes to Mr. Joseph Fuchala for allowing me to conduct this research in his school. I am grateful to the staff at Easthaven Elementary School for their encouragement, support, and continual commitment to excellence in education. Thanks also to Ricky, Porsha, Walter, Wendy, Corey, Angelo, Rita, and Aaron for their participation in this study. I enjoyed working and will remember them with fond memories.

I am grateful to friends, Greg Drevno, Philip Ward, Marie Cull, Jim Dunne, Dan Bullara, and Lori Dunn for their and assistance in the preparation of this document. I would also like to express my gratitude to my colleagues: Dr. Ralph Gardner, III, Dr. Teresa Grossi, Dr. Diane Sainato, Dr. Tim Heron, and Dr. William L. Heward for their encouragement, support, and friendship shown throughout my doctoral program.

Finally, I want to thank my sister, Ann Sweeney, for her support, encouragement, and grammatical expertise.
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CHAPTER I
INTRODUCTION

Educators are concerned with students who "drop out" prior to completing high school (Ekstrom, Goertz, Pollack, & Rock, 1986; Hall & Keogh, 1978; Lloyd, 1978). For years educators have understood the correlation between academic failure in school and the increased prevalence of students dropping out of school (Fine, 1986; Rumberger, 1987; Wehlage and Rutter, 1986). Society pays for these drop outs (Sainato, 1987). Ultimately these persons exist on the fringe of our society. Economically deprived children are part of a reoccurring cycle of poverty, low socioeconomic status, and subsequent increased risk of school failure (Fine, 1986; Rumberger, 1987). School drop outs and antisocial behavior are correlated with environmental conditions of deprivation and poverty. The United States Census (1990) estimates that as many as 30 percent of school aged children live in poverty. Variables related to the cycle of poverty and the increased likelihood of children from these settings having problems in educational environments puts them significantly at-risk for academic failure in school (Schaeffer, Staresinic, Reider, & Cummings, 1989). This risk increases the likelihood of school drop outs. Many scholars and educators see the educational system as a means of combatting societal problems (Ryan, 1976). In our heterogeneous society, schools are not only for teaching academic subjects but are major socializing
agents. Many topics that were traditionally taught at home or in the church such as sex education and drug prevention have become important aspects of most public school curricula. In addition, teenage pregnancy, hygiene, nutrition, family counseling, suicide prevention, moral development, AIDS education, and a host of other societal issues have become important curricular issues in the schools (Kaufman, 1989). Not dropping out of school, therefore, becomes very important because it allows students continued access to environments that promote socialization and personal growth.

Student labeled "at-risk" do so poorly in school they are in danger of academic failure. Many at-risk students are poor readers. As Heron and Harris (1987) pointed out, success in school relies heavily on adequate reading skills. Those students who can not read or are struggling with reading fall behind and may become behavior problems in the classroom (Kaufman, 1989; Kerr, Nelson, & Lambert, 1987). It is common also for emotional problems to accompany differences in reading (Estes, 1971; Estes & Vaughan, 1973).


Harris and Sipay (1980) reported that 10 to 15 percent of the general school population have reading disabilities. Reading problems are especially prevalent with the group of "at-risk" students with specific learning disabilities
(Mercer, 1987). Although these students comprise less than five percent of the total number of public school children (U.S. Department of Education, 1991), Kaluger and Kolson (1978) note that 85 to 90 percent of all learning disabled children have reading and comprehension disabilities. Substantially more students are enrolled in programs for the learning disabled because of deficits in reading than for difficulties in any other academic area (Brabner, 1969; Chall, 1978; McCormick & Cooper, 1991; Ip & McCormick, 1989-1990). Reading problems with learning disabled learners are associated with poor and inadequate instruction (Cohen, 1973; Englemann, 1969; Haring & Bateman, 1977), auditory processing difficulties (Samuels, 1973), and teacher/student personality differences (Heilman, Blair, and Rupley, 1977). Carnine, Silbert, and Kameenui (1990) demonstrated that reading problems strongly influence self-esteem and competency in school. Several authorities (e.g., Carnine et al., 1990; Harris & Sipay, 1980; McCormick, 1987; Mercer, 1987) recommend the development and employment of remedial strategies to improve reading and comprehension problems of students with learning disabilities.

Since 1960, the disciplines of teacher effectiveness and behavior analysis have independently evolved and prospered. They follow different research orientations to study education. Teacher effectiveness emphasizes group comparison and statistical inference (Brophy & Good, 1983) stressing the classroom as the foci. Behavior analysis deploys single subject experimental designs with repeated measures of individual behavior to discover functional relationships between independent and dependent variables (Cooper, Heward, & Heron, 1987). Both research orientations independently discovered the importance of active student responding. Data showing the relationship
between active student responding and academic achievement were essentially the same, regardless of research design and underlying program philosophy. The concept of academic learning time (i.e., ALT) in the teacher effectiveness literature (e.g., Berlinger, 1983; Fisher, Berlinger, Filby, Marlave, Cahen, & Dishaw, 1980) and the synonymous term in Behavior Analysis, opportunities to respond (i.e., OTR) (e.g., Greenwood, Delquadri, & Hall, 1984) have both found a significant relationship between high active student responding and high academic achievement.

Observational studies reveal disappointing results regarding the prevalence of active responding in classrooms. For example, teachers in six inner-city elementary schools allocated 75% of the school day for academic instruction. Unfortunately, the students in these classes spent less than 1% of the day actively reading aloud, orally answering questions, asking questions, and reciting material. For many students 45% or more of their instructional day was spent passively attending to the teacher (Hall, Delquadri, Greenwood, & Thurston, 1982). The vast majority of classrooms use passive instructional practices such as lecture, seatwork, or recitation by a single student at a time (Stodolsky, Ferguson, & Wimpelberg, 1981). Durkin (1978-1979) noted little explicit instruction and pupil participation during instruction on reading comprehension. Results from 24 fourth-grade classrooms for over 5,000 minutes revealed that teachers and students participated in explicit comprehension instruction less than one percent of the time. Teachers spend most of their time asking questions and spend very little time giving explicit or direct instruction in helping students understand the meaning of a paragraph or story (Durkin, 1981).
Several authorities developed explicit, direct procedures to increase active participation in the classroom (e.g., Carnine, Kuder, Salvino, & Moore, 1983; Linden & Wittrock, 1981). These procedures are designed to increase active student responding (Greenwood et. al., 1984). Students were taught generative activities during reading (Carnine, et al., 1983; Linden & Wittrock, 1981) and strategies for comprehension skills (Day, 1980; Patching, Kameenui, Colvin, & Carnine, 1979; Raphael, 1980; Singer & Donlon, 1982). Similarly, procedures for teaching study skills yielded significant improvements in text book comprehension (Dansereau, Collins, McDonald, Holley, Garland, Dickhoff, & Evans, 1979; Larkin & Reif, 1976).

Decoding, vocabulary knowledge, and comprehension are important areas for reading instruction (Henderson, 1972). Decoding has received more research attention than vocabulary or comprehension (e.g., Durkin, 1976; Dykstra, 1966; Gibson & Levin, 1975; Glass & Burton, 1973; Hood, 1977; Peters & Lloyd, 1987; Robinson, 1946). Strategies such as mediated word identification (Cunningham, 1975-1976), the neurological impress method (Downs & Morin, 1990; Hollingsworth, 1978; Heckelman, 1966), paired readings (Topping, 1987), use of context cues (Goodman, 1965), are used to teach decoding skills. Tape recorded stories with high interest reading passages (Carbo, 1978; Ellery, 1989), outcome prediction procedures (Smith, 1975), high interest books (Trachtenburg & Ferruggia, 1989), and the use of literature to promote thinking skills (Kimmelman, 1981) are used to motivate beginning and remedial readers.
Samuels (1979) advocated for reading fluency (i.e., speed and accuracy). Reading quickly and accurately are often overlooked outcomes of reading instruction (Calfree & Drum, 1986). Allington (1983) pointed out that nonfluent oral reading is a characteristic of disabled readers, yet fluency often is not an instructional objective. Authorities say that (a) oral fluency is a necessary feature of good reading (Allington, 1991; Lipson & Lang, 1991; Dowhower, 1991; Sindelar, 1987; Stayter & Schreiber, 1991, 1980), (b) readers can acquire fluency with instruction (Blum & Koskinen, 1991; Hoffman & Isaacs, 1991; Zutell & Rasinski, 1991), and (c) fluent reading improves overall reading ability (Bear, 1991; DeFord, 1991; Nathan & Stanovich, 1991). Fluency provides a means for quickly and easily mastering new skills (Bereiter & Scardamalia, 1986). Fluent readers become experts because they are more proficient at incorporating complex skills, assimilating large amounts of content, understanding knowledge structures, and problem representations. In addition, fluency is thought to be related to the eventual generalization and maintenance of reading skills (Howell & Lorson-Howell, 1990; Ivarie, 1986; Liberty, Haring, White, & Billingsley, 1988).

Some problems in reading comprehension may be a function of deficits in automatic decoding (Klapp, Anderson, & Berrian, 1973; Perfetti & Hogaboam, 1975). LaBerge and Samuels (1974) said that decoding words automatically was a prerequisite for fluent and proficient readers and would increase a students comprehension of textual materials. Strategies such as repeated readings of familiar materials were developed as a method to achieve the automaticity of decoding necessary to become a fluent reader (Samuels, 1979). Cunningham (1979) pointed out that accurate word identification skills are not
sufficient for the development of fluent readers. Readers must be able to automatically decode words so that they can attend to the meaning of the text. Nonfluent readers use their time deciphering the text which distracts from comprehending what was read (Hickman, 1977).

Many educators recommend incorporating remedial programs to develop fluency (Downs & Morin, 1990; Henk, Helfeldt, Platt, 1986; Howell & Lorson-Howell, 1990; Ivarie, 1986; Miccinati, 1985; Sindelar, 1987). Ivarie (1986) showed the importance of remedial procedures that emphasized accurate and quick reading skills. Ivarie found that when fluency was emphasized three below average readers performed with significantly greater accuracy and at a higher fluency of words read than in the nontreatment condition. Cunningham (1979) found that remedial procedures increased fluency of decoding, comprehension and the enjoyment of reading. Miccinati (1985) recommended the use of prosodic cues (e.g., intonation and stress) in poetry passages that focused on intonation stress and duration of word calling as a means of improving oral reading fluency. Sindelar (1987) suggests teaching new vocabulary, words in isolation, words within phrases, passage previewing, repeated readings, correcting errors, and providing feedback and reinforcement as tactics for improving fluency. Imitative reading, listening to a prerecorded audiotape while following along in the text, paired readings, and the neurological impress method are also effective strategies for improving fluency (Henk, Helfeldt, & Platt, 1986).

The educational community is increasingly interested in the use of repeated readings to improve reading fluency of students with reading disabilities (Blum & Koskinen, 1991, 1982; Chomsky, 1976; Moyer, 1982;
Repeated reading is recommended as a remedial technique for learners who do not read well (Mounstein, 1990, O'Shea & O'Shea, 1988; Moyer, 1982). Allington (1977) and Downing (1982) stressed the importance of reading practice. Without reading fluency, beginning readers may not learn how to compensate for the lack of graphic clues in print corresponding to prosodic cues in oral language (Shreiber, 1980). Taylor and Wade (1983) suggested that repeated readings develop familiarity with vocabulary, content, and style of text. The repetition of words and phrases in repeated readings promotes the automaticity in decoding skills that is necessary for students to become fluent readers (O'Shea & O'Shea, 1988). Samuels (1979) showed the relationship between repeated reading and automaticity. When a passage is difficult, readers focus on decoding words rather than main ideas, central characters, cause and effect relationships, inferences, and supporting details. Automaticity of decoding allows students to attend to the task of deriving meaning from the passages (Spedding & Samuels, 1977). The use of repeated reading is also motivational for students with reading problems. Successful repetition and practice of difficult words through repeated readings results in improved competence in reading, higher self-esteem, and greater cooperation during instruction (Chomsky, 1978).

The purpose of repeated readings is to build fluency (Samuels, 1979). Three components have been emphasized in research on oral reading fluency: (a) decoding (Dahl, 1979; Fleisher, Jenkins, & Pany, 1979; Herman, 1985), (b) overall reading speed and accuracy (Carroll, McCormick, & Cooper, 1991; Koskinen & Blum, 1984; Lee, 1990), (c) and the relationship between reading fluency and comprehension (Brosovich-McGurr, 1991; Georgeff, 1991; O'Shea,
Sindelar, & O'Shea, 1985). Herman (1985) evaluated eight "reading disabled," intermediate-grade students over a 3-month period on five separate reading passages practiced repeatedly. Results from the repeated readings showed increased reading frequency, fewer speech pauses, improved accuracy in word recognition, and significant increases in comprehension. Similar outcomes were found using repeated word lists by Fleisher, Jenkins, and Pany (1979). Their findings indicated that decoding training, whether focusing on isolated words or on phases, significantly increased the accuracy and speed of decoding with single words. Although the effects on decoding from this procedure were positive, the results did not improve comprehension. Koskinen and Blum (1985) investigated the effectiveness of repeated readings for enhancing fluency of below average readers. Significant improvements in total reading speed, accuracy of decoding (i.e., semantically inappropriate miscues), and favorable acceptance of the repeated readings procedure by the participants lead the researcher to conclude that the use of this procedure was an efficient and beneficial means of providing the necessary practice, on a classwide basis, for the development of fluent readers. Lee (1990) and Carroll et al. (1991) combined reciprocal peer tutoring and a Precision Teaching measurement system respectively, with repeated readings to improve the reading fluency of elementary and severe behavior handicapped learners. Additional research on potential classroom applications of repeated readings will reaffirm the robust nature of this procedure and encourage more frequent adoption of this instructional method.
Repeated readings have also effectively improved reading comprehension. Yaden (1988) illustrated the importance of multiple readings of the same material to improve comprehension of text. The investigation of the effects of text manipulation and multiple reading strategies of average and disabled readers showed that practice rather than the manipulation of phrasing proved to have the most facilitating effect on disabled readers' recall of "idea units" during a free or cumulative retell situation (Taylor, Wade, & Yekovich, 1985). Bromage and Mayer (1986) had 90 college students listen to a taped lecture for a photography class and were assessed after 1, 2, or 3 presentations. The results suggested that those students who had repeated exposure showed a quantitative increase in amount learned and a qualitative change in the reader's processing strategy. These studies lend credibility to the assertion that repeated readings and exposure to material will improve students' recall and comprehension.

Research on decoding has produced important results. Improvements in sounding out words, oral reading fluency, and vocabulary acquisition have been produced through research on decoding. Until about 20 years ago, however, there was little interest in the analysis of factors influencing reading comprehension (Peters & Lloyd, 1987). If understanding the meaning of what is read was important then research on comprehension should be increased. Chomsky (1976) believed teachers need to augment instruction of decoding skills. They need to produce fluent readers and improved comprehension skills.
McCormick (1987) defined comprehension as: matching information provided by an author with a reader's background information to determine the intended meaning in a text. Comprehension involves both a process (recognition of words and their relationships, searching memory for stored schemata, finding a match, etc.) and a product (the resulting information that is understood, perhaps in stored in memory, and perhaps later recalled) (pp. 309).

Reading comprehension is often assessed by (1) presenting cause and effect relationships (Pearson & Johnson, 1978; Smith, 1967), (2) identifying the main idea (Robinson, 1983), (3) drawing conclusions and inferences (Hansen & Lovitt, 1977; Gusrak, 1967; Hansen, 1981; McCormick & Hill, 1984; Wilson, 1979), (4) following sequences of events and written directions (McCormick, 1987), (5) critical reading and problem solving (Harris & Hodges, 1981; Patching, Kameenui, Carnine, Gersten, & Colvin, 1983) and (6) describing images from a passage (e.g., such as the ocean water was as blue as an opal) (Levin, 1973; Linden & Wittrock, 1981; Sadoski, 1983). Reading comprehension is assessed usually with teacher directed comprehension questions (Brown, Campione, & Day, 1981). In the elementary grades, reading comprehension is focused on retention of lists of things, efficient recall, or drawing inferences from narrative passages.

Elementary students may comprehend more with oral reading or listening activities than with silent reading (Morris, 1970; Rowell, 1976; Swalm, 1972). Student responses to written and oral teacher-directed questions, including higher level thinking skill questions (Spache, 1981), are the most widely used procedures for assessing comprehension (Clark, Gage, Marx,
Peterson, Stayrook, & Winne, 1979; Gusrak, 1967). Other widely used assessment procedures include the Reading Miscue Inventory (Goodman & Burke, 1982), multiple-choice questions (Pugh & Brunza, 1975), and fill in the blank questions (Jones & Pikulski, 1974; Rankin, 1978; Warwick, 1978).

Increasing recall of information from expository passages has received limited attention in the professional literature concerned with comprehension. Several authors, however, advocate the use of free retells as a viable assessment alternative to structured comprehension measures (e.g., Brown & Smiley, 1977; Hansen, 1978, 1979). Comprehension measures, such as answers to oral or written questions, often contain contextual clues that can bias assessment of comprehension. Retelling permits students to report freely what they understand from the reading. In addition, it gives teachers the opportunity to discover what from the reading is relevant to the readers (Kintsch, 1977). Retelling is a reliable assessment for literal and inferential reading comprehension (Hansen, 1979). Adams, Carnine, and Gersten (1982) suggested that the development of more reliable and objective measures, with more exacting scoring procedures, will improve the validity and adoption of retelling procedures.

A growing body of research has promoted retelling to assess reading comprehension (e.g., Adams et al., 1982; August, Flavell, & Clift, 1984; Greenewald & Rossing, 1986; Lang, 1985; Loyd & Steele, 1986; Sadoski, 1984; Sundbye, 1987). Retelling is a measure of how students assimilate and reconstruct textual information (Johnson, 1983; McCormick & Cooper, 1991). Currently, retelling as an assessment of reading comprehension is featured in a wide variety of research and instructional situations (August, Flavell, & Clift,
1984; Brosovich-McGurr, 1991; Loyd & Steele, 1986; McCormick & Cooper, 1991; Sadoski, 1984). It is also used with elementary students (Askew, 1985; August, Flavell, & Clift, 1984; Greenewald & Rossing, 1986; Sadoski, 1984), secondary students (McCormick & Cooper, 1991), and disabled learners (Alexander, 1985; Brosovich-McGurr, 1991; Douge, 1983).

Askew (1985) believes retelling is most appropriate as a measure of literal comprehension of expository text. Much less is known about the appropriateness of retelling as a measure of inferential reading comprehension. In addition, the widely used study skill strategy, the SQ3R (i.e., Survey, Question, Read, Recite, Review) (Robinson, 1941), has been effectively studied using retelling to assess literal comprehension of textual material (Alexander, 1985; Douge, 1983; McCormick & Cooper, 1991).

Precision Teaching is a measurement procedure requiring direct and daily assessment of students’ skills within a given duration of time. Many precision teachers and their students use one-minute timings when counting performance. Quite often students are observed competing against themselves to accelerate their correct reading frequency and decelerate their frequency of learning opportunities (i.e., incorrects). This self-competition is functionally related to the Precision Teaching measurement procedure and performance charting (Downs & Morin, 1990). Measurement procedures relying on frequency counts and the Standard Celeration Chart (i.e., a visual display of performance and learning) as a feedback mechanism give the teacher and the student an accurate and reliable picture of current performance relative to past performance (Lindsley, 1990a). Daily assessments of learner performance on specific skills allow teachers to evaluate the effectiveness of instruction (Binder,
1990b). Howell and Lorson-Howell (1990) described the easy-to-understand learning pictures that evolve as a result of the frequent assessment, and as well, the visual display on the chart allows for curriculum-based decision making (McGreevey, 1983).

Precision Teaching procedures were developed by teachers to help them assess the effectiveness of their instructional practices with students. One of the founding principles of Precision Teaching is that "the student knows best" (Lindsley, 1990b). This statement is predicated on the fact that students' performance determines the effectiveness, or lack there of, of an instructional procedure. Learner performance over time is the measure for effective instruction. Data shown on the chart is the instructional feedback to the teacher and tells the teacher to continue or make an instructional change. As West, Young, and Spooner (1990) pointed out, Precision Teaching procedures allow the teacher to make empirically-based decisions for the adjustment of instruction based upon the analysis of student learning. Several principles are integral components of Precision Teaching (Lindsley 1990a, 1990b; West et al., 1990): (a) the student knows best; (b) direct and daily measurement of behavior and continuous monitoring; (c) the use of frequency of response (i.e., the number of responses during a given period of time) as a universal measure of behavior; (d) the use of a standard chart for the visual display of learner performance; (e) the use of clear, concise, descriptive and functional definitions of behaviors; (f) the ongoing empirical analysis of teaching strategies (environmental variables) on student learning (individual behavior); (g) the emphasis on developing or improving desirable behavior rather than just reducing undesirable behaviors. In addition to these guiding principles,
Precision Teachers use instructional aims (i.e., performance goals), use multiple "learning channels" (i.e., auditory, visual, tactile, and kinetic learning modes), have students chart their own behavior, predict future behavior from the performance on the chart, and use the standard chart to document measurably superior instruction (Binder, Haughton, & Van Eyk, 1990; Koorland, Keel, & Ueberhorst, 1990; Lindsley, 1990b; White, 1986).

Precision Teachers have shown the effectiveness and importance of direct and daily assessment for the development of fluent behaviors (e.g., Brosovich-McGurr, 1991; Carroll et. al., 1991; Lee, 1990; Maloney, Desjardine, Broad, 1990; Peterson, Hudson, Mercer, & McLeod, 1990; Wolking, Harris, Ferro, & Scott, 1990). Carroll et. al. (1991) reported the effects of repeated readings on the acquisition and fluency development of oral reading. This study illustrated that learning does not end after the student has acquired the decoding skills. It continues until reading is automatic. They believe that fluent reading will encourage the use of reading in other settings. Brosovich-McGurr (1991) and Lee (1991) found similar results as Carroll et. al. (1991). Brosovich-McGurr used repeated readings with aims and visual feedback and Lee used repeated readings and peer tutoring to improve reading fluency.

**Statement of the Problem**

Brosovich-McGurr (1991) analyzed the effects of repeated readings and visual feedback on fluency of oral reading and comprehension with learning disabled high school students. She found that fluency of oral reading greatly improved. Her results also showed that the improvement transferred to other previously unread passages of equivalent grade levels. The repeated reading scarcely improved recall of text. Even as the students became more proficient
decoders and more fluent readers with the treatment passages, the number of "information units" retold only slightly increased. In fact, the students appeared highly motivated to meet the aims and obtain the feedback for the oral reading. They showed little interest and a great deal of apathy, however, with the retelling assessment procedures. One possible reason for the lack of improvement and motivation in retelling assessments may have been because no instructional aims or visual feedback were used with the students.

**Purpose**

Although several studies have investigated the used repeated readings to improve decoding and fluency in oral reading (Brosovich-McGurr, 1991; Carroll, et al., 1991; Lee, 1990), no studies have investigated these components in relationship to fluency of reading comprehension. The purpose of this study will be to systematically replicate and extend the comprehension results from the Brosovich-McGurr (1991) study. This study will investigate: (a) the effects of repeated exposure through repeated readings for effectively improving elementary at-risk and learning disabled students comprehension fluency; (b) the effects of repeated readings on transfer of comprehension fluency to previously unread passages of equivalent grade levels and across participants; (c) the celeration of key words and descriptive phrases retold -- evaluated through the emerging learning pictures; (d) the effects of repeated readings for improving the oral reading fluency of elementary students; (e) the celeration of words read orally -- examined through the emerging learning pictures; (f) the accuracy of the experimenter's observation and recording during the session; and (g) the effects of student satisfaction with the repeated readings.
Research Questions

1. Will repeated readings be functionally related to an improvement in the recall of text?

2. Will improvements in the number of key words and descriptive phrases retold during repeated reading instruction transfer to previously unread passages at equivalent grade levels?

3. What will be the celerations of key words and descriptive phrases retold per minute?

4. Will repeated readings be functionally related to an improvement in oral reading fluency?

5. Does the experimenter's immediate and continuous observation and recording during the session result in an accurate measure of students' retelling performance?

6. Will the students make positive comments, enjoy the reading program, and request instruction with the repeated reading and retelling procedures?
CHAPTER II
LITERATURE REVIEW

Reading, we must remember, is a process of getting meaning from the printed page by putting meaning into the printed page. Reading taste and ability are always tethered to past experience. But reading itself is one way of increasing this capital fund of past experience.

Reading, therefore, must be seen as more than saying the word, more than seeing the sentences and paragraphs. Good reading is the way a person brings his whole life to bear on the new ideas which he finds on the printed page. It is reading the lines, reading between the lines, and reading beyond the lines. It is an active, not a passive, process. The good reader becomes involved with the writing and the writer. He agrees, he argues back. He asks: Is it true? Is it pertinent? What, if anything, should I or could I do about it?

- Edgar Dale (The Educator's Quotebook, p. 70)

Because this study examined retelling assessments as a measure of reading comprehension, this review of literature will focus on contemporary definitions of comprehension and research on reading comprehension. In addition, the review addresses retelling as an assessment of reading comprehension. The first section of the review will describe: (a) contemporary
definitions of reading comprehension, (b) current dimensions and changing perspectives regarding reading comprehension, (c) comprehension from a behavior analysis perspective, and (d) a detailed description of exemplary experiments on reading comprehension. The second part of the review will identify retelling procedures and analyze how they are used for the assessment of reading comprehension. The retelling portion is organized in the following manner: (a) an introduction and explanation of retelling procedures, (b) a review of selected experiments that used retelling for assessment of reading comprehension, (c) a review of selected studies that used retelling measures to evaluate the effectiveness of study skills instruction, and (d) a discussion of several limitations in the use of "information units" with retelling procedures. Finally, the conclusion will briefly discuss the importance of continued research in the area of reading comprehension and implications for classroom application.

To give the reader an appreciation for the depth and scope of contemporary reading comprehension research a detailed description of several studies was provided. These studies were selected to show the variety of experimental variables, theoretical perspectives, and methodological approaches used to analyze factors related to reading comprehension. In addition, several exemplary experiments using retelling procedures were reviewed in detail. The theoretical and methodological importance of exemplar retelling studies (e.g., Adams, Camine, Gersten, 1982; Alexander, 1985; McCormick & Cooper, 1991) has been extremely influential in contemporary reading comprehension research. The development of the "information unit" (Adams, et al., 1982), the use of single case experimental design (Alexander,
1985; McCormick & Cooper, 1991), and the use of retelling assessments to investigate the effects of study skills instruction (Alexander, 1985; McCormick & Cooper, 1991) were all important factors that assisted in the development this research study.

Reading Comprehension

Reading makes people think. Thinking augments understanding and knowledge of the environment or world. If we agree with Decartes' (1908/1637, p. 32) classic philosophical statement "Cogito, ergo sum" (i.e., I think, therefore I am), then knowledge derived from thinking assists in description, prediction, and control of the environment. However, thinking never occurs in a vacuum. The consequences of the effects on the environment mediate a person's private thoughts (i.e., inner, verbal behavior accessible only to the speaker) (Calkin, 1992). Reading is an important example of the interaction between thoughts and their effects on the environment. As Edgar Dale (1984) pointed out, reading is more than just saying words. Reading is comprehending or evoking meaning from the text. The meaning and knowledge derived from reading integrates a person's private thoughts, history, and experiences with the ideas and concepts on the printed page. This acquisition of knowledge, through reading and other forms of verbal behavior, and subsequent use of that knowledge in both public and private realms, sets humans apart from other species in the world.

The ability to extract and infer meaning from the printed page fundamentally alters what it is to be a sentient individual. Reading evokes knowledge and meaning that expands the contingencies controlling human behavior. Situations, settings, circumstances, behaviors emitted by characters,
and the consequences of actions are important components found in reading passages. Reading is the understanding of the contingent relationship between these components and their effect on the reader. In short, the consequence of reading is the acquisition of knowledge from source other than direct experience. These indirect acting contingencies present rules and consequences for actions (Skinner, 1969). The consequences of rule following provides reinforcement that occasion similar responses under similar circumstances in the future. These rules often take the form of directives, suggestions, parables, laws, maxims, and other forms of verbal behavior that control and govern human behavior. Reading creates a situation where indirect acting contingencies, such as rules, exert considerable control over behavior. The knowledge obtained and the subsequent control of behavior are acquired only when the reader can understand, extract, and infer meaning from the text. In other words, the reader can comprehend what he or she read.

The word comprehension comes from the Latin word *comprehendere*, to understand or comprise. This definition of comprehension, to understand or comprise, is consistent with most definitions of reading comprehension. Webster's unabridged dictionary lists six meanings for comprehension: (a) the act or process of comprising; (b) the faculty or capability of including: comprehensiveness; (c) the act or action of grasping with the intellect: understanding; (d) knowledge gained by comprehending; (e) the capacity for understanding fully; and (f) connotation (Woolf, 1974, p. 229). Most educators recognize and equate act of understanding and acquisition of knowledge as fundamental characteristics of comprehension. From this foundation, reading
comprehension is the process or actions that lead to the acquisition of knowledge or understanding of a written text.

Over the past 40 years, developmental and cognitive psychologists have dominated theory, research, and practice in the area of reading comprehension. They believe that text comprehension is an example of internal psychological processes that are responsible for the construction of meaning. Syntax and semantics (Fillmore, 1968), the effects of sentence structure as tests of generative transformation theory (Chomsky, 1957; 1965), and the processes related to memory and recall of information (Carrol & Freedle, 1972; Miller & Kintsch, 1980) are all examples of ongoing areas of research in reading comprehension. Theoretical conceptions and definitions are currently guided by current themes in developmental and cognitive psychology: (a) the readers construction of meaning from the text, and (b) how a readers prior knowledge helps them construct meaning (Conlan, 1990).

The current zeitgeist, or cognitive revolution, has brought about the prominence of what has been called a constructivist or schema-theoretic view of reading comprehension (Tierney, 1990). The constructivist perspective believes that individual past history or subjective background knowledge is used to help guide the reader through the text to create, advance, or produce meaning. Comprehension is then an inferred result of the appropriate construction of meaning through the cognitive processing of the mind. Although the constructivist or schema-theoretic perspective of reading comprehension is essentially a structural analysis, many cognitive psychologists believe that comprehension is a dynamic thinking process. This thinking process is a creative, interactive endeavor exemplified by a series of unending "iternal
conversations" between the reader and the author of the text (Barclay, 1990). This action oriented perspective or creative endeavor is a reaction to criticisms that definitions of reading comprehension from a cognitive processing perspective were essentially mechanistic and had little to do with the actual act of reading and deriving meaning from the text. Tierney (1990) defended the cognitive position in this definition of reading comprehension:

The days when reading comprehension skill was equated with reading speed or the ability to regurgitate the text have thankfully given way to a broader view of reading. Overly text-based accounts of comprehension have been displaced by multifaceted considerations of the subjectivity of meaning-making, shared communities of readers, and reading as the flexible orchestration of problem-solving strategies in conjunction with the thoughtful consideration of ideas. Further, inference and evaluation are regarded as essential to achieving basic understanding as they are to the critical thinking that grows with interpretation and the ability to recount literal detail (p. 37).

The cognitive and developmental psychologists attempt to describe the underlying processes that supposedly help to create and construct meaning from a text. Like a fine tuned watch with all the cogs, springs, and other internal mechanisms running in sync, from a cognitive perspective, reading comprehension occurs when all the internal cognitive processes are working correctly to construct meaning from a text. In other words, the cognitive and developmental psychologists are attempting to describe how reading comprehension occurs, rather than strictly the outcomes.
Researchers investigating the comprehension of readers from a cognitive processing perspective are accounting for "how" they understand, not "what" readers do (Myers, 1991). Although many cognitive psychologists are strong advocates of a processing model, many conduct research from a process/product perspective. For many cognitive and developmental psychologists, the process/product research in reading comprehension augments their hypo-deductive theories of cognitive processing. Unlike the descriptions of "how" reading comprehension occurs, those researchers from a process/product orientation emphasize the "what" or the strategies and outcomes resulting in reading comprehension. The process/product model focuses on the skills that are both the "product" and the "process" of comprehension. The strategies that incorporate specific skills related to reading and comprehension form what is known as "process" in this model. The "product" relates to the students performance outcomes such as being able to understand the text. In other words, the process from this perspective is the act of reading and the strategies students use for decoding and comprehension, whereas, the product is the performance outcomes such as the percentage of main ideas correctly identified on reading tests of related competencies.

Cognitive psychologists and process/product researchers use the results of studies in reading comprehension to support their theories of cognitive processing. Calfee and Drum (1983) described three essential components to any act of reading comprehension: a text, a reader of the text, and an interpretation of the text by the reader. These three components serve as broad categories of comprehension variables that are then investigated by reading researchers. Specific areas of inquiry related to improving a reader's
comprehension skills are developed from these broad categories of variables. Many studies use statistical measures to infer a relationship between the results of a variable on an experimental group of subjects when compared to a control group of subjects (Calfee & Drum, 1983). These results then affirm or negate the researchers' hypothesis about the cognitive processes supposedly responsible for reading comprehension. Specific comprehension skills often identified by reading researchers are: (a) reader's ability to interpret the main idea (e.g., Barclay, 1991; Robinson, 1983), (b) follow the sequence of events (e.g., Grant & Davy, 1991; McCormick, 1987), (c) discern stated and implied supporting details (e.g., Hildyard & Olson, 1982, Neville & Searls, 1991), (d) understand vocabulary in context (e.g., Graves & Slater, 1987; Stahl & Fairbanks, 1986), and (e) make inferences (Dewitz, Carr, & Patberg, 1987; Poindexter, 1985).

Developmental and cognitive psychologists are redefining reading comprehension in light of: (a) recent research (Crano & Johnson, 1991; Hirumi & Bowers, 1991; Reutzel & Hollingsworth, 1991; Wolman, 1991), (b) preconceived preoccupation with discrete skills (Guthrie, 1980; Rosenshine, 1980), and (c) perspectives of the interactional process associated with reading (Barclay, 1990; Flood & Lapp, 1990; Tierney, 1990). Two recurrent themes appear in the writings and definitions of developmental and cognitive psychologists studying reading comprehension. First, readers construct meaning. Meaning is not inherent in the text but results from the reader's interaction with the text and other environmental variables (Conlan, 1990). Second, prior knowledge assists with understanding.
Contemporary views discuss reading comprehension in terms of an active search for meaning in the text. The mature or competent reader is engaged with the text and actively constructs meaning by "interacting" and "transacting" with printed words and integrating new information with preexisting knowledge (Flood & Lapp, 1990). Most contemporary educators agree that effective comprehension results from the interaction of four important sets of variables: (a) reader variables (e.g., age, ability, affect, motivation), (b) text variables (e.g., genres, type, features, considerateness), (c) educational context variables (e.g., environment, task, social grouping, purpose), and (d) teacher variables (e.g., knowledge, experience, attitude, and pedagogical approach) (Flood and Lapp, 1990, p. 490).

There is a strong emphasis for viewing reading as an interactive thinking process. A thinking process where the reader is actively engaged in a series of unending "internal conversations" between the author of the text and background knowledge of the reader (Barclay, 1990). This transactional or interactional model incorporates the discrete reading skill models along with how the reader uses these skills during the act of reading. The interaction and interdependency of several skill related variables and their relationship to reading results in the subsequent outcome called reading comprehension.

Some believe readers actively engage in the construction of meaning with the interactive process (Tierney, 1990). Nonproficient readers do not interact in ways that assist in the development of meaning. Nonproficient readers may lack background knowledge, experiences, and interactive reading skills necessary for comprehension. Further, the nonproficient reader may not be aware of the importance of actively constructing meaning from the text.
Barclay (1990) illustrates that importance of the construction of meaning through an interactive process in this passage:

The successful, "mature" reader engages in reading as an active search for meaning. During this constructive and strategic process, the reader makes meaningful connections among ideas in a text, integrates this information with background knowledge, and engages in ongoing evaluation or monitoring to determine whether comprehension is occurring. In contrast, immature or disabled readers often do not monitor their own comprehension, and they frequently seem unaware that they are not putting information together in a sensible way (p. 84).

Viewing comprehension as an interactive process of interrelated variables with the intended purpose of constructing meaning from a text may be an important first step teaching comprehension to nonproficient readers.

An Alternative View of Reading Comprehension

The science of behavior and the philosophy of radical behaviorism provides an alternative view of reading comprehension. Operant behavior is behavior that is selected by its consequences. Operant behavior is defined by the history of consequences of a behavior and the antecedent variables that occasioned the response. Operants are defined by their effects on the environment and in terms of their relationship to controlling variables (Cooper, Heron, & Heward, 1987). Those who study operant behavior are attempting to discern how changes in the environment affect behavior. Changes in behavior due to the manipulation of a specific variable are known as functional relations. The study of contingent interactions between behavior and its environment and
resulting functional relations is the realm of the scientific inquiry of behavior analysis.

Most educators assert that the goal of reading is understanding. Reading comprehension is defined by behavior analysts as a class of related behaviors. For example, this class of related behaviors interacts with many different types of controlling variables that occasion specific responses resulting in understanding. The effects of reading comprehension upon its environment is described in terms of the contingent relationship between: (a) antecedent variables that occasion a response, (b) observable and measurable behavior, and (c) resulting consequence or change in the environment. Reading comprehension from a behavior analytic perspective is analogous to turning on a light bulb. For instance, having the proper circuits connected, having the electricity turned on, making sure that the light bulb is not burned out, having the light switch placed within convenient reach of an individual, and needing lighting in a dark room are all examples of antecedent conditions or setting events that both serve as necessary prerequisites and to occasion the behavior of flipping on the light switch. Similar antecedent variables and setting events serve to occasion reading and as prerequisites to successful comprehension. Many antecedent variables and setting events serve to occasion behaviors responsible for comprehension. For example, antecedent conditions or setting events such as the (a) text, (b) the reader's individual history and experiences in reading comprehension (i.e., background, age, establishing operations, affect), (c) context variables (e.g., physical environment, social milieu, task), and (d) instructional components (e.g., teacher directions, pedagogical approach, instructional continuity and consistency, and teacher's affective characteristics)
interact with one another to occasion reading and behaviors called comprehension. These examples of antecedent variables are by no means inclusive. The important aspect is to recognize the importance of these antecedent variable as they occasion behaviors that produce comprehension.

Although antecedent variables are important, the light will not come on unless they successfully occasion the behavior of flipping on the light switch. The same holds true for reading comprehension. If the antecedent conditions or setting events do not occasion behaviors such as retelling information, listing main points, inferring cause and effect relations, and a host of other related response then comprehension will not occur. Comprehension occurs when the antecedent variables are working together as a unit to occasion the reading behaviors that will result in understanding. Also, the type of comprehension that result from these reading behaviors are a reflection of the interaction of antecedent variables, the reading behaviors, and the implied consequences of these behaviors. For instance, a question may occasion specific changes in the environment, such as retelling details from a text. The effect of this retelling results in understanding the details of a passage more commonly known as literal comprehension. Any other questions may occasion other behaviors that indicate other forms of understanding such as inferential, cause and effect, and decoding.

Contemporary Research in Reading Comprehension

Reading researchers have investigated instructional variables to improve the comprehension skills of students who have difficulty remembering and understanding texts. These students who are academically at-risk often lack the necessary knowledge, experience, and prerequisite skills to demonstrate
comprehension (Flood & Lapp, 1990). Some students can read words but not comprehend the text. The development and assessment of instruction to improve reading comprehension is of paramount importance. Teaching students skills in imagery (e.g., Oakhill & Patel, 1991), comprehension monitoring (e.g., Steinberg, Bohning, & Chowning, 1991), prereading instruction (e.g., Dole, Valencia, Greer, & Wardrop, 1991), and the effects of sentence-combining strategies (Neville & Searls, 1991) are recent attempts to develop and assess instruction to improve students reading comprehension.

Difficulties in remembering and recalling information inhibits understanding and comprehension. One method of possibly improving reading comprehension is through imagery training. Children who use mental images of a story answered more questions and recalled more information about a story than students who did not create such mental images (Pressley, 1976). Mental images or pictures may facilitate the recall of different types of information (Oakhill & Patel, 1991).

Oakhill and Patel (1991) assessed the effects of imagery instructions on learners who comprehend well and those with comprehension difficulties. Moreover, they investigated whether imagery might facilitate recall of different types of information by asking the students different types of questions about the passage. Subjects were selected from 192 children, ages 9 to 10 years old, attending three English junior schools (i.e., the English junior schools are equivalent to students in the upper elementary grades in the United States). Screening also consisted of an adapted form of the Neale test (1966) to assess comprehension of 90 students. This pool of 90 students differentiated 22 students who comprehend well and 22 learners with comprehension difficulties.
These two groups were further subdivided into two matched groups, one of which was given training in imagery.

This study investigated whether imagery is effective with three different types of comprehension questions: (a) factual information directly from the text, (b) inferential questions that asked about information that could only be inferred from the story, and (c) descriptive details that would be evident if an effective image was formed. Training in this experiment incorporated both "representational" and "transformational" imagery. Representational imagery is the direct translation of text into an image. Transformational imagery, by contrast, is where the text is transformed so the image does not correspond directly with the text but is used as a sort of mnemonic (Oakhill & Patel, 1991).

Students in the imagery training condition received three sessions of instruction on how to develop images related to the stories they were reading. After the first story, the experimenter showed the students two sets of pictures. The first picture showed a single drawing portraying the main point of story. This was the representational image of the story. The second set of pictures showed a series of drawing portraying the sequence of action in the story. This was the transformational component of the intervention. The children were then told to imagine these pictures to help answer the comprehension questions. The same instructions were provided during the second session, with one exception, only the single drawing of the main point of the story was shown to the students. In the final training session, the students were not shown either set of images and were told to develop images about the story similar to the drawings used in the prior two sessions to help them answer the
comprehension question. Students in the control condition read the same three stories during the first three sessions, but did not receive any imagery training.

The students in the imagery training condition were then compared to a control group during a test phase on 6 additional story passages. The students in the imagery training group were reminded to form mental images to help them answer the comprehension questions, while the students in the control condition were told to read each selection carefully. A 2 by 2 factorial design compared the proficient and nonproficient readers under the imagery training or control condition (i.e., no instruction condition). Results showed a marked improvement in memory for the passages with the group of nonproficient readers given imagery training. This group performed significantly better on test questions than did the control group of nonproficient readers. No significant main effects resulted from the comparison of proficient readers in either the imagery training or control groups.

The results of this study show that imagery training was especially beneficial for student who did not possess adequate comprehension skills, and that it did not differentially affect the retention of information of different types (Oakhill & Patel, 1991). The findings from this study suggests that imagery training is an effective instructional strategy, especially with nonproficient readers, because it enables them to integrate textual information in a way that they would not normally do. Second, imagery training provides nonproficient readers with a strategy to assist them in overcoming some of the limiting factors of their comprehension skills. Finally, imagery training may give students the means of circumventing memory deficits that inhibit their reading comprehension.
Dole, Valencia, Greer, and Wardrop (1991) assessed the effects of two methods of prereading on comprehension of narrative and expository texts. Theirs was the first experimental study of the effects of teacher-directed and interactive instructions on reading comprehension. The teacher-directed instructions facilitated learning by providing students with the prerequisite knowledge needed for understanding the new material. The teacher instructed the students on key concepts, vocabulary, or appropriate conceptual background to assist understanding of the text. In contrast, the instructions activated prior knowledge of the students and with discussion related or integrated that knowledge to the text. The interactive strategy was an attempt to make a text relevant by relating it to the every day experience of the students.

The subjects were 63 fifth-grade students from an elementary school located in a small Midwestern town. All were currently reading from a fifth-grade basal reader. The subjects were randomly assigned to 1 of 3 instructional groups. Each group received the three experimental conditions. The three prereading experimental conditions included: (a) the teacher-directed condition, (b) the interactive condition, and (c) a control condition. In the teacher-directed condition, the teachers read prepared scripts giving information necessary for understanding the text (e.g., plot, main characters, and other important information needed to understand the story topic). The interactive condition used "a teacher-led discussion designed to activate students' existing knowledge and to elicit from them important facts, ideas, and concepts about the passages topic" (Dole, et al., 1991, p. 149). A script of the lesson was provide to help guide the teacher-led discussion. Students were asked to think about what they already knew about a topic and then to write
their thoughts in a short paragraph. This short think to write assignment was then used by the teacher to stimulate a more in-depth discussion regarding the topic. Both strategies gave students a purpose for reading and directions for completing the comprehension questions. Finally, during the control condition students were simply instructed to read the passages independently and answer the comprehension questions and received no prereading instruction.

Each condition spanned two days; 1 day of a narrative text, and 1 day for an expository text. All passages were rotated during the treatments, classes, and teachers for counterbalancing the effects. Each passage was presented to a different group, by a different teacher, and under a different treatment condition. Data were measured using a hierarchical multiple-regression analyses of within-and between-subjects. Results indicated that the teacher-directed strategy was the most effective treatment in producing increased passage-specific comprehension, followed by the interactive strategy. Not surprising, both the teacher-directed and the interactive strategy were far superior to the control condition.

A highly structured approach, the explicit and direct instruction provided, or in the procedure itself are alternative explanations that could account for effectiveness of the teacher-directed approach in this study. Some argue that the interactive strategy used was not sufficient to adequately and effectively activate the prior knowledge of the students (Dole, et al., 1991). Although these results are important considerations, the results of the study provide strong support for direct, clear, and explicit prereading instruction to improve students' reading comprehension.
Readers select, adapt, apply, and change strategies in an attempt to understand what they read (Hare & Pulliam, 1980; Wham, 1987). Self-monitoring, in this context, refers to the use of a reader's own "cognitive resources" to resolve problems in understanding. Readers may use self-monitoring as a method to contemplate, monitor, evaluate their understanding as they read, and apply corrective procedures when comprehension is impaired (Carnine, Silbert, & Kameenui, 1990). Steinberg, Bohning, and Chowning (1991) investigated how nonproficient college readers monitor reading that is challenging. The process of identifying and describing the types of self-monitoring comprehension strategies most frequently used by nonproficient readers is an important step in the development of interventions to remediate comprehension deficits. It is important to determine what self-monitoring strategies are most widely used by nonproficient readers so teachers do not teach strategies that have been shown to be unsuccessful with those learners.

Steinberg, Bohning, and Chowning (1991) studied 20 freshmen who met the criteria as nonproficient readers (i.e., they scored below the 15th percentile on a standardized reading test) and were enrolled in campus reading assistance programs as participants. Students reported their thoughts using a think-and-say procedure as they read difficult expository texts. The experimenter explained, modeled, provided students practice on the read-aloud procedures, and reviewed the videotapes with the students during each session. Students reported their thoughts as they read with regards to the strategies they employed to improve comprehension of easy and difficult passages. Protocols were developed from transcripts of the think-and-say and
Adapted categories from the Gibson taxonomy (Gibson, 1983) were used for the analysis of these protocols. This taxonomy provides a classification for describing comprehension monitoring with word-related, sentence-related, and discourse-related strategies. Data scored from the 20 protocols were subdivided into segments or units of data; units of data were defined as verbal expressions of a thought which reflected a way of dealing with comprehension (Steinberg, Bohning, & Chowning, 1991). These units of data were then classified into specific strategies of the word-related, sentence-related, and discourse-related categories. Data were also classified by reading ease, debugging (i.e., correcting or adjusting for a problem in comprehension, and closure after identifying a problem.

Their results described the percentage of time students used specific strategies within the word, sentence, and discourse-related categories. Of the 10 strategies listed under the word-related category, the most frequent was recognizing an unfamiliar word. Of the 12 strategies listed under the sentence-related category, the most frequent were paraphrasing, inferring, and reading. Of the 15 strategies listed under the discourse-related category, the most frequent was interrelating the text (e.g., drawing conclusions). Interestingly, none of the students used graphic aids, skimming, associating with experiences, rereading from the beginning of the passage, noting contrast, or evaluating. Of the 21 strategies listed under the reading with relative ease category, the most frequently used strategies to monitor their comprehension were paraphrasing, inferring, identifying important points, and adding...
explanatory information. Of the 27 strategies listed under the debugging comprehension problems category, the most frequent were either recognizing an unfamiliar word or rereading. Finally, of the 11 strategies listed under the closure after identifying a problem category, the most frequent were paraphrasing and inferring.

Steinberg, Bohning, and Chowning (1991) noted several important implications of their study with respect to reading assistance programs. First, college reading assistance programs should provide instruction to assist students in the development of comprehension self-monitoring skills. Second, self-monitoring instruction should include strategies at the word, sentence, and discourse levels. Third, self-questioning procedures should be adopted to help students develop self-monitoring repertoires. Fourth, students should be taught to question and check their paraphrases and inferences while they are reading. Finally, students should be encouraged to discuss their self-monitoring strategies with their peers or instructors. All of these suggestions hopefully will improve the instruction in reading assistance programs and remediate comprehension difficulties of nonproficient readers.

A meta-analytic review of the literature was conducted by Neville and Searls (1991). They reviewed studies that measured the effects of sentence-combining strategies on reading comprehension. Sentence-combining involves combining several "kernel" sentences into a longer, more complex sentence containing adjectives and adverbial modifiers, phrases, different clauses, and so forth (Neville & Searls, 1991). Sentence-combining is often used to improve the writing skills of students. The practice provided in sentence-combining tasks such as using syntax of the language to encode
semantic relationships is related to improvements in student written expression. Because of the interrelatedness of language arts, it is likely that sentence-combining strategies would also improve reading comprehension. Being able to put together units of meaning in writing, through the practice during sentence-combining instruction, is an example of Chomsky's (1957) transformational theory of grammar. Successfully constructing meaning while engaged in written language activities should generalize to greater skill at identifying those same comprehension units during reading (Searls & Neville, 1982).

Out of an original pool of 34 studies investigating sentence-combining strategies, Neville and Searls (1991) chose 24 studies on the basis of germaneness, methodology, independence, and effect size irregularities. The selection criteria were important to control for threats to internal and external validity. A meta-analysis with the 24 studies examined the effects of sentence-combining procedures on reading comprehension. This meta-analysis presented four questions related to effect size: (a) whether there were differences among effect size associated with the type of criterion measure used in the studies; (b) differences among effect sizes depending on the grade level at which the studies were conducted; (c) a difference in effect size based on the length of time (i.e., long or short) the treatment was in effect; and (d) a difference in effect size based on the publication date (i.e., old or new) of the studies. An examination of threats to internal and external validity on the 24 studies showed no significant influence on the effect sizes and provided rationale on which to base the decisions about sentence-combining instruction in group settings.
Neville and Searls (1991) found that sentence-combining in the elementary grades increased reading comprehension more than similar procedures in the higher grades. The meta-analysis assessing treatment time, criterion measures, and date of publication did not reveal any significant difference in effect sizes. These results suggest that elementary students may derive more benefit than older students from instruction on sentence-combining (Neville & Searls, 1991). It may be advantageous for educators to include sentence-combining strategies in the elementary school’s reading/language arts curriculum to improve reading, writing, and comprehension skills of students. Finally, Neville and Searls (1991) recommend that future meta-analysis research carefully select studies based on the a priori criteria related to germaneness and methodology. This will ensure control of any threats to the internal and external validity of the study.

Reading comprehension research is criticized for a preoccupation with performance variables and the analysis of discrete skills (Guthrie, 1980). In a literature review that encompassed nearly 4 decades of research, Rosenshine (1980) concluded that there was no definitive evidence to support the analysis of discrete skills in reading. This declaration suggests that no one discrete skill may be responsible for improvements in reading comprehension. Rather reading comprehension may be the outcome of an interaction among a cluster of related behaviors. If Rosenshine’s (1980) conclusions prove valid, then reading comprehension could be investigated as one unitary skill rather than a group of discrete skills.
Reutzel and Hollingsworth (1991) investigated reading comprehension with the distinctiveness hypothesis and the unitary hypothesis. The distinctiveness hypothesis predicts "that student's scores for the reading skill taught would exceed the comprehension skills not taught to the students" (Reutzel & Hollingsworth, 1991, p. 32). The unitary hypothesis suggests concurrent improvements in all reading comprehension skills even though the teacher is only teaching one specific comprehension skill. The unitary hypothesis predicts that improved performance on a discrete comprehension skill will transfer to other related comprehension skills and affect similar growth.

Sixty-one fourth-grade students and 53 sixth-grade students from the same year-round school participated in the study (Reutzel & Hollingsworth, 1991). A multi-group pretest-posttest control 5 factorial design was used to analyze the data. Students and teachers were randomly assigned to specific comprehension skill training groups identified as: (a) locating details, (b) drawing conclusions, (c) finding sequence, (d) determining main idea, and (d) control group. Ten teachers instructed the treatment groups and monitored the control groups. The teachers used 10 researcher-constructed skill lessons for each of the four comprehension skill areas. The control group engaged in sustained silent reading. The Barnell Loft Specific Skills Tests (Boning, 1982) were used for pre and posttesting of comprehension skills.

An Analysis of Covariance was used to calculate the main effects among and between the four treatment groups and the control group. Results of this study showed no significant differences between the scores of the four skill instructional groups and a control group on the four target comprehension skills at the end of a ten-day instructional period. Two grade level effects were found.
The sixth-grade students performed significantly better than their fourth-grade counterparts on drawing conclusions, and finding the sequence. This study showed that teaching discrete comprehension skills resulted in similar improvements for all comprehension skills measured regardless of skills taught (Reutzel & Hollingsworth, 1991). This study suggested that a unitary or holistic perspective on reading comprehension is more useful than conceptualizing it in terms of a series on discrete skills or subskills taught in isolation. Moreover, sustained silent reading of relevant and meaningful material is as effective and possibly more beneficial than instruction and practice on discrete comprehension skills.

The results of this study imply several important implications for classroom instruction. First, Reutzel and Hollingsworth (1991) recommend increasing the amount of time students spend in and out of school engaged in sustained reading. Encouraging students to spend more time reading provides students additional practice that is likely to result in improved comprehension. Second, teaching of comprehension should emphasize how to understand a given text rather than on mastery of discrete skills. Third, teaching students topical and relevant content, as a prerequisite to reading the text, provides students the important background information necessary to understand a text. Finally, Reutzel and Hollingsworth suggested that teachers may want to cut down on the number of worksheets assigned as comprehension practice and substitute in their place a variety of literature, trade books, and informational texts.
Retelling and Reading Comprehension

Active participation in literature experiences is recommended to improve the recall of important information and to enhance a sense of story structure (Morrow, 1984). Enhancing students recall from of expository passages is essential for academic success. The primary means of reading comprehension assessment comes in answers to oral or written questions. Teacher-directed questions often contain contextual clues that bias the assessment of comprehension. Several authors recommend the use of free retells as a viable alternative to teacher-directed comprehension questions (e.g., Brown & Smiley, 1977; Hansen, 1978, 1979; Morrow, Gambrell, Kapinus, Koskinen, Marshall, & Mitchell, 1986). Retelling allow students to actively participate in the reading comprehension assessment by enabling them to construct their own personal meaning from a text. During retellings, students construct meaning from a passage by freely reporting information that is personally relevant and interacts with their background history. The reconstruction of a story's elements through retelling provides a reliable assessment for both literal and inferential comprehension (Askew, 1985). Further, retelling is a strategy for instruction, reinforcement, assessment, and adoption of relevant curriculum material to assist and enhance students comprehension (Morrow et al., 1986). From retelling, teachers are provided the opportunity to learn what aspects of the reading are relevant to the readers (Kintsch, 1977).

A growing research base is emerging in the area of reading comprehension using retelling assessments (August, Flavell, & Clift, 1984; Gambrell, Pfeiffer, & Wilson, 1985; Grenewald & Rossing, 1986; Morrow, 1984; Morrow, 1985; Sadoski, 1984). For example, Askew (1985) explored the effects
of a measurement task and retelling on sixth-grade students comprehension of expository text. In another investigation, Morrow (1985) examined the effects of pre-school children's comprehension and sense of story structure using retelling as the dependent measure. Other researchers used retelling assessments to study text structure, imagery, and affect in the recall of stories by children (Sadoski, 1984). Retelling is used extensively to evaluate the effects of study skills instruction as related to comprehension of expository texts (Adams, Carnine, & Gersten, 1982; Alexander, 1985; Douge, 1983; McCormick & Cooper, 1991). Retelling is also used to investigate reading comprehension with pre-school students (Morrow, 1985, 1986) elementary students (Askew, 1985; August et al., 1984; Gambrell et al., 1985; Greenewald & Rossing, 1986), secondary students (Brosovich-McGurr, 1991; McCormick & Cooper, 1991), and learners with learning disabilities (Alexander, 1985; Douge, 1983; Rose, Cundick, Higbee, 1983). The remainder of this literature review will summarize exemplar experiments that used retelling assessments and discuss the implications of research outcomes and classroom applications.

Research on Retelling and Reading Comprehension

Researchers have investigated retelling as a procedure to improve reading comprehension. One area investigated is an analysis of the retelling with proficient and less-proficient readers (Gambrell, Koskinen, & Kapinus, 1991). Retelling is the verbal reconstruction of text-acquired information (Gambrell, Koskinen, & Kapinus, 1991). This reconstruction focuses students attention on restructuring textual information and requires a holistic approach to the organization of information. The reader synthesizes information provided in the text with background knowledge and constructs a personal interpretation of
the text's meaning through verbal reconstruction. The text occasions intraverbal responses of previously shaped operant behavior. Retelling allows the reader opportunities to ponder what a text says, its meaning, and the authors intentions (Gambrell et al., 1991).

The purpose of the Gambrell et al. (1991) study was to investigate the effects of practice in retelling on the story comprehension of proficient and less-proficient elementary school readers. The authors wanted to replicate the research of Rose, Cundick, and Higbee (1984) that showed that verbal rehearsal through retelling significantly improved reading comprehension of elementary students with learning disabilities. Two questions guided the Gambrell et al. (1991) investigation. First, would retelling of text-based information improve with practice? Second, would practice in retelling differentially affect reading comprehension performance of proficient and less-proficient readers.

The participants in this study were 48 fourth-grade students from four elementary schools in Maryland (Gambrell et al., 1991). Twenty-four students, categorized as less-proficient readers, scored at the 41st percentile or below on the reading comprehension section of the California Achievement Test (CAT). Twenty-four students, categorized as proficient readers, scored at the 68th percentile or higher on the CAT. The researcher selected eight narrative stories from basal readers that were not a part of the schools curriculum. Four stories written at a second-grade level were read by the less-proficient readers, and four at a fourth-grade level were read by the proficient readers. The different reading levels were selected to accommodate the different academic functioning of the two groups of learners.
Students received no direct instruction on retelling. The experimenter met individually with the students. The student read a story silently. When completed, the experimenter asked them to take a minute or two to think about the story they just read and then to retell everything they could remember (i.e., free-recall propositions). At the conclusion of the first and fourth sessions, the students answered eight orally administered comprehension questions (i.e., cued recall). The readability level of the stories comprised the only difference between the students in the proficient and less-proficient conditions.

Retells of plot and theme points (i.e., free-recall propositions) from the text were scored. Repetitions were not counted. Elaborations on the text were counted as positive elaborations. Plot and themes points inconsistent with the stories or erroneous were considered negative intrusions. Their results showed that engaging in retelling improved students reading comprehension for both proficient and less-proficient readers after only four sessions of practice. Further, significant improvement resulted across recall of text-based propositions, recall of story structure elements, and cued recall. The results of the study also suggest that retelling enhances both the quality and quantity of what is learned from reading.

August, Flavell, and Clift (1984) applied retellings to compare the comprehension monitoring of skilled and less skilled readers. Comprehension monitoring was used by students to spontaneously resolve potential confusion in texts. For instance, children who incorporate their own background knowledge with the information provided in the text are better able to resolve inconsistencies, ambiguities, or confusion within a passage. More skilled
readers can "fill in the blanks" with inferences when adequate information is lacking.

Many less skilled readers do not resort to comprehension monitoring. August et al. (1984) suggested three possible reasons why less skilled readers are deficient in comprehension monitoring. First, students may make erroneous assumptions that all written material is clear, consistent, and unambiguous. Therefore, they may perceive the problem not as a poorly written document, but as some personal inadequacy or deficiency. Second, erroneous inferences may lead a student to overlook or fail to notice a potential problem. Finally, the type of story passage, the types of probes used for assessments, and related incompatible behaviors may contribute to problems in comprehension monitoring.

The purpose of the August et al. (1984) study was to find out more about factors that influence comprehension monitoring by comparing skilled and less skilled fifth-grade readers. Thirty-two students participated in the study. Half these students were classified as skilled and the other half less skilled on the basis of their scores on the Comprehensive Test of Basic Skills, Level 2, Form S (1973). The authors defined skilled as "those who scored at or above grade level (5.8 or above)"; less skilled readers were defined as "those who scored at least 1 year below grade level (4.7 or below)" (p. 41). Students from both groups were matched on the basis of intelligence.

The experimenter selected 2 sets of 5 stories each of which contained approximately 130 words. All the stories were written at a second grade level. The experimenters altered 3 of the 5 stories by omitting a page to create ambiguity, confusion, and inconsistencies in the text. The two other stories
remained unaltered and no information was omitted. The order of the stories was inconsistent, consistent, inconsistent, consistent, inconsistent. The authors hypothesized that skilled readers would be more likely than less skilled readers to recognize that a page was missing.

Students read the five stories on the screen of a microcomputer. Before reading, the students received instruction on turning the pages on the computer screen. The experimenter measured the number of "look backs" for each story. The experimenter explained that a page might be missing from some of the stories. Students were instructed to read each passage silently and when completed to retell in their own words everything they could remember about the passage. If the students thought a page was missing from the passage, they were given an index card and asked to write down: (a) where they would place the missing page, (b) why they thought the page was missing, and (c) what they thought was needed to "fix up" the story. If they thought that no page was missing, they read the next story. The fifth story was read aloud from index cards and then the computer. The students were again asked if they thought a page was missing and the same steps outlined above were followed when a missing page was reported. After completion of the reading passages, the experimenter conducted a short review asking students to reread portions of the stories to see if they identified missing elements or pages. If the missing pages were not identified, the experimenter directly confronted the students with the inconsistencies (e.g., If David's car stopped, how was he able to win the race) (p. 43).
The results showed that skilled readers correctly identified the page missing on the inconsistent stories significantly more often than their less skilled counterparts. In addition, subsets of each group appeared to detect the problems at a lower level as evidenced by the longer reading times, lookbacks, and making erroneous inferences at the point of the inconsistency. Differences in intelligence, decoding skills, and ability to recall story information were not sufficient to explain the differential performance on comprehension monitoring by the skilled and less skilled readers. The authors also asserted for both groups that inferring that is not marked as hypothetical by the students may lead them to believe the meaning of a story is consistent.

The results suggest five important implications for education. First, the ability to recall and retell information from a text does not necessarily mean that the retell is meaningful. Second, students may engage in constructive reorganization without reporting problems or inconsistencies inherent in the text. Third, applying comprehension questions to confirm adequacy of students' understanding may not foster greater comprehension or more adequate comprehension monitoring. Fourth, teachers should remember that even skilled readers need and can benefit from instruction in comprehension monitoring. Finally, August et al. (1984) showed the importance of administering retelling procedures as an assessment procedure to investigate reading phenomena such as comprehension monitoring.

Sundbye (1987) used retelling procedures to help assess the effects of text explicitness and inferential questioning on story understanding and recall. Findings from reading research reveal that an ambiguous text and a text with missing information is difficult to read due to attentional and time demands.
(Kintsch & Van Dijk, 1978). As Carr (1982) said, the more ambiguous the text and the more readers are forced to infer missing elements, the more difficult the text is to comprehend. If a text is made more explicit it will decrease making inferences about missing information. Making a text clear and specific allows students the opportunity to focus more time and attention on comprehension and meaning of the text.

The purpose of the study by Sundbye (1987) was to develop a systematic procedure for elaborating basal reader stories and to observe the effects of those elaborations on comprehension and recall of elementary students. Three target stories were made more explicit by adding character relationship maps, scenario participant maps, and a set of goal structures. The addition of background knowledge, summary events, and explanations of concepts also helped make the text more explicit. Moreover, students orally retold information from the text and made inferences that facilitated other elaborations of the texts.

Sundbye (1987) investigated two specific areas: (a) that text explicitness would improve students silent reading fluency, their interest in the stories, their retelling information and answering questions about the stories, and their overall understanding of the stories; and (b) the effects of written versus oral elaborations would not significantly differ. Thirty-six third-grade students, from three elementary schools in the Midwest, participated in the study. Three stories were selected from a common second-grade basal reader not used in the school district where the study was conducted. A $3 \times 3 \times 2$ factorial design evaluated the students across three conditions that made up the between-subjects factors (i.e., questions, explicit text, and control), and story and time of
recall (i.e., immediate and delayed) as the within-subject factors. Each condition consisted of a group of 12 students, each of whom read all three stories.

Results showed that a greater percentage of information was recalled during immediate than delayed retelling. Further, the results revealed that adding large amounts of supporting information both improved students recall as well as their interest in the stories. Similarly, this additional supporting information did not adversely affect the students silent reading rates or the amount of information included in their story retells. In addition, making the stories more explicit with inference questions produced similar results to the addition of supporting information. Results indicated that the two experimental conditions produced similar outcomes. Both did not detract from the number of content units of retold by the students.

Sundbye (1987) offers several suggestions for classroom application and curriculum development. First, the results suggest that text manipulations, in the form of adding relevant information or through inference questioning, may improve reading comprehension. Second, the lack of negative effects upon the quantity and quality of retells contradicts the notion that "excessive, irrelevant detail" adversely affects reading comprehension. Finally, although this study was not designed to assess the effectiveness of any specific intervention, the results promote the adoption inference questioning strategies in the classroom to facilitate reading comprehension and text explicitness.

Many reading deficits exhibited by students with learning disabilities are said to result from cognitive processing problems or deficiencies in the use of mnemonic memory strategies (Tarver, Hallahan, & Kauffman, 1976). "Normal"
readers are more adept at actively engaging in reading, using organizational skills, and deploy their processing capacities than students with learning disabilities (Rose et al., 1983). One possible remediation for these problems may be to use verbal rehearsal or visual imagery to aid students in recall and comprehension. Rose et al. (1983) conducted two studies investigating visual imagery and verbal rehearsal as a mnemonic aid for students with learning disabilities. Visual imagery is a strategy where students conceptualize visual images of episodes with in a story. These images assist students in the recall of story elements. Verbal rehearsal is the retelling of story elements after reading part of a text.

The first experiment compared the effects of verbal rehearsal, visual imagery, and "unaided" instruction on reading comprehension of elementary students with learning disabilities. Thirty students from 10 elementary schools served as participants. These students ranged from 8 to 9 years of age, possessed average intelligence scores (WISC-R), and whose reading levels were between 1.5 and 2.7 grade equivalencies. The students were randomly assigned to one of the three experimental conditions: verbal rehearsal, visual imagery, and "unaided" instruction. The students met individually each session to read selected basal reading passages and immediately orally answer 20 comprehension questions. To test for retention, the students completed the comprehension questions 15 minutes after the session and again after one week. Students in the verbal rehearsal and visual imagery groups received instruction about the respective mnemonic strategies to assist with recall and comprehension. The students in the "unaided" instruction group received no direct instruction and were told to just read and answer the comprehension
questions. A statistical analysis conducted with a 3 x 3 analysis of variance revealed that reading comprehension recall was significantly greater for students in both the verbal rehearsal and visual imagery groups when compared with students in the "unaided" instruction group.

A second experiment investigated whether students with higher WISC-R Verbal IQs than Performance IQs and vice versa showed different results with verbal rehearsal than with visual imagery. Rose, Cundick, and Higbee (1983) used a small-N, single case experimental design to compare the two procedures. The experimental design had three conditions: (a) baseline with "unaided" instruction, (b) instruction in either verbal rehearsal or visual imagery, and (c) a return to baseline. Four students, 2 with high verbal IQs and low performance IQs and 2 with low verbal IQs and high performance IQs, were selected as participants. One student with high verbal and low performance IQs and one student with low verbal and high performance were assigned to either the verbal rehearsal or visual imagery conditions.

Results showed greater gains in recall and comprehension by the two students who received instruction in verbal rehearsal. Although positive improvements resulted with the students who received instruction in visual imagery, the results did not appear as beneficial as those from the verbal rehearsal instruction. Also, students in both experiments rated the verbal rehearsal procedures more positively on student satisfaction inventories than the visual imagery or "unaided" instruction. Visual imagery was difficult for students to understand and apply. Verbal rehearsal was easy to learn and use for the majority of students. As Rose et al. (1983) discussed, verbal rehearsal may be developmentally more appropriate for improving recall and
comprehension, especially for elementary students with learning disabilities, than visual imagery procedures or other mnemonic strategies.

**Retelling and Study Skills Instruction**

Several studies (Adams, Carnine, & Gersten, 1982; Alexander, 1985; Douge, 1983; McCormick & Cooper, 1991) used retelling assessment to explore the effectiveness of instructional procedures to teach study skills. Effective study skills are essential for success in school. Beginning in the intermediate-grades much of the daily instruction time is occupied by independent reading completion of independent seatwork assignments, and teacher directed discussions about the content of what they read. Students are expected to have effective independent study skills. Less than one percent of the instructional time, however, is devoted to teaching study skills (Durkin, 1978-1979). Although some students incidentally develop beneficial studying strategies, many students require some direct instruction on study skills. Results from several studies, with a variety of different populations and curriculums, show the effectiveness of SQ3R study skills procedures (e.g., Kahn, 1978; Lawrence, 1978; Spenser, 1978; Stoodt & Balbo, 1979).

Adams et al. (1982) investigated whether intermediate-grade students recalled more factual material from social studies texts if they learned to work with a specific study skills strategy. The study skills strategy taught: (a) how to follow the strategy, (b) reasons for using the study skills, and (c) how to self-monitor the application of the study skills (p. 30). Study skills instruction reflected Robinson's (1941) SQ3R method for improving students independent
study skills. The SQ3R consist of five steps that students systematically use while reading a text:

(a) **Survey**: read through the heading quickly to learn what to study;
(b) **Question**: change the headings into a question (i.e., to focus learner on essential information within each section of the text);
(c) **Read**: to answer the questions;
(d) **Recite**: at the end of each heading, either write brief notes about important information within the text or engage in self-recitation; and
(e) **Review**: after completing the above steps on the entire selection, review the main points of the notes by self-recitation and check to see if correct (Adams et al., 1982, p. 31; Robsonson, 1941).

Adams et al. (1982) used an adapted six step SQ3R procedure:

(a) preview the passage by reading the headings and subheadings;
(b) recite subheadings;
(c) ask yourself questions about what might be important to learn;
(d) read to find important details;
(e) reread the subheadings and recite important information; and
(f) rehearse (i.e., read each subheading and recite important details)
(pp. 33-34).

Instruction with the adapted SQ3R method incorporated a task analysis of the teaching procedures and adopted the principles of direct instruction (e.g., Berliner & Rosenshine, 1976; Rosenshine & Berliner, 1978; Stallings, 1980). Scripted lessons, frequent teacher prompting and subsequent fading of prompts with students, structured lessons requiring frequent students responses, and
designated error correction procedures were direct instruction components found in the study.

Forty-five students in the fifth-grade who scored less than 1 year below grade level on a standardized reading achievement test and less than 50% on two individualized tests of study skills, served as participants in the study (Adams et al., 1982). The students displayed sufficient decoding skills to read a social studies textbook, but demonstrated deficiencies in independent study skills. Fifteen students were randomly assigned to either a treatment condition with systematic instruction in study skills, a control condition with independent seatwork on the same material with feedback from the teacher, or a control condition with independent seatwork on the same material with no feedback or instruction from the teacher. The students received four days of training on effective study skills. After training, students were provided a passage to study from a fifth-grade social studies textbook. After reading and studying the passage, the experimenter asked students to retell as much of the important information from the passage as they could remember. Students completed a short answer comprehension test on important facts in the passage after completing the retelling assessment. The retelling assessments were repeated after two weeks as a posttest.

One innovative component of this study (Adams et al., 1982) was the development and application of "information units." "Information units" are sentences or clauses containing a single subject-verb or subject-verb-object relationship and prepositional phrases that give additional information (such as names or date). "Information units" are included on the master protocol when 3 of 5 teachers list the same ideas on their outlines of the passages. A tally of the
number of "information units" retold determined students' retelling scores. Paraphrasing or synonymous words are acceptable as long as the general idea of the information unit remains intact. The development of the "information unit" became important after several subsequent studies (Alexander, 1985; Douge, 1983; McCormick & Cooper, 1991) based their retelling procedures on the Adams et al. model.

Results showed that students in the systematic instruction of study skills condition performed significantly better than the students in the two comparison conditions on the short answer comprehension tests. There was no significant difference between the no instruction group and the independent study with feedback group. Although significance was not reached using the retelling assessment due to the high levels of variability, the descriptive data indicated improvements in performance during the systematic instruction of study skills method when compared to the other samples. Students in the systematic instruction condition spent a greater amount of time studying before taking immediate and delayed short answer tests. On the delayed tests, students in the systematic instruction group took less time to complete the tests, with no appreciable decline in performance. The maintenance and recall of the information by the systematic instruction group, as shown in the delayed testing condition, is an especially important finding showing the efficacy and effectiveness of instructional procedures for study skills.

The Adams et al. study suggested several important considerations for classroom instruction and research. First, their study affirmed retelling as a viability free-recall assessment of reading comprehension. Second, the development of the "information unit" provided a useful measurement for
retelling. Third, the results indicated that teaching study skills may increase attention to textual material and improve reading comprehension. Adoption and implementation of study skills instruction may enhance the understanding and academic achievement of students. Fourth, this study was reported to be the first to validate Robinson's (1941) SQ3R method with an elementary population. The reported effectiveness of the SQ3R with a broad range of students has made it particularly appealing to educators. Finally, Adams et al. recommended using direct instruction to teach the use of study skills.

The improvements in reading comprehension that sometimes accompany study skills instruction is especially important for special needs and intermediate level students who are experiencing academic difficulties with content laden textbooks. Alexander (1985) replicated the results of the Adams et al. (1982) study by exploring the functional relationship of study skills training related to the oral retelling of expository material by elementary students with learning disabilities. Alexander (1985) combined many of the methodological components of Adams et al. (1982) while extending the findings by (a) lengthening the 4-day training phase to ensure that all students received sufficient instruction and practice to master the study skills procedure, (b) taking daily measures of students performance and adapting instructions to meet the individual needs of students, and (c) using retelling as the major measure of reading comprehension.

Three 11-year-old students enrolled in a elementary resource classroom for students with specific learning disabilities located in a suburb of Columbus, Ohio served as participants in the Alexander (1985) study. The students displayed grade level word recognition skills but their reading comprehension
skills were 1 to 2 years below grade level on standardized tests. Reading
passages were taken from the third-grade level of Reading for Concepts
(Liddle, 1977) and contained approximately 200 words. The number of oral
retells was the primary dependent variable. Retelling was measured once per
session after students orally read a passage. Master protocols of "information
units" were developed for the objective measurement of retelling. These
protocols were developed by: (a) inserting paragraph subheadings into each
passage so that each passage contained a title and four or five subheadings;
(b) outlining the paragraphs using the paragraph subheadings as major points
and listing minor points of information under each subheading; (c) using the
master outlines to develop information units as defined by Adams et al. (1982).

Alexander (1985) combined a multiple-baseline across students analysis
with a reversal design to analyze the effects of study skills instruction on
retelling. During baseline, students chose a passage, orally read the passage,
and retold as much as they could remember about what they read. Before oral
reading, each student received additional time to study the passage. Students
also studied a list of words identified as potentially unfamiliar or difficult before
oral reading. Students received no instruction on retelling or reading
comprehension during baseline. During study skills instruction, students were
taught an adapted SQ3R (Robinson, 1941) study skills procedure. Detailed
teaching scripts, as described by Adams et al. (1982), were used to present
feedback and prompts. These scripts systematically faded the feedback and
prompt statements after students showed mastery of the study skills strategies.
Procedures for the second baseline and study skills condition remained the
same as the earlier conditions. Changes in experimental conditions were
based on the daily analysis of students performance and subsequent stability of data. During maintenance, "systematic fading of feedback statements continued until the student followed the study skills rules with no interruptions from the experimenter until ready to retell" (Alexander, 1985, p. 265). Postcheck taken 1-week and 1-month after completion of the study served to assess long-term maintenance effect.

Alexander's students retold more information following study skills instruction then when they retold information after using their own study method. The analysis confirmed the presence of a functional relationship between systematic study skills instruction and improvement in retelling. Further, postchecks revealed that retelling performance maintained at high levels. This study reaffirmed the importance of study skill instruction to improve retelling. The results of this study expanded the verbal rehearsal (Rose, Cundick, & Higbee, 1983) and retelling research (Adams et al., 1982) through replications with different populations and methodological advances. Finally, an important aspect of this study is the methodological continuity and empirical effectiveness of "information units" for assessing students retelling performance.

Contrasting retelling results emerged from three studies conducted by McCormick and Cooper (1991) that applied the SQ3R with secondary students with learning disabilities. Previous results showed positive improvements in students retelling performance after instruction on SQ3R study skill techniques (Adams et al., 1982; Alexander, 1985; Douge, 1983). In the first study, McCormick & Cooper (1991) investigated the effects of retelling assessments related to study skills instruction with high school students. Examining the effects of retelling on study skills with high school students was an important
expansion of the literature since the focus of the majority of research in this area had been elementary students (Adams et al., 1982; Alexander, 1985; Douge, 1983). In the second study, McCormick and Cooper (1991) explored the difference in length of material read and the retelling percentages of students by comparing three different types of SQ3R study skills instruction: (a) SQ3R instruction with a long passage and review; (b) SQ3R instruction with a short passage and review; and (c) SQ3R instruction with a short passage and teacher prompting. The third experiment compared the retelling performance of students, on 300 word passages, during an SQ3R instructional condition and during a no instruction condition.

The reading requirements for secondary students are much different than those for elementary students. Secondary students are expected to read and comprehend much longer, more detailed, and more difficult reading passages. Literal comprehension of expository texts, as shown by retelling performance, is an important factor related to academic success. Unfortunately, many students with learning disabilities in reading and language arts experience difficulty, frustration, and failure due to the strenuous reading requirements in secondary curriculums.

The general procedures for all three experiments remained the same. The dependent variables were scores obtained from students retelling information after they had read passages from current history textbooks (McCormick & Cooper, 1991). Similar to previous research in the area of study skills instruction (Adams et al., 1982; Alexander, 1985; Douge, 1983), these three experiments used master protocols of "information units" for each passage. The "information units" were used to assess retellings of the students.
Also, students in all three studies received instruction using the SQ3R study skills method. Since the purpose of these experiments was to investigate the effects of SQ3R instruction on comprehension, the reading passages selected for instructional levels rather than grade levels. This procedure reduced the chance that word recognition and decoding deficits would adversely affect students comprehension and subsequent retelling. Further, all retelling sessions were audiotaped to facilitate accuracy checks at a later date by an independent observer.

Nine students served as participants in the first study and were selected from the population at a state rehabilitation center for adjudicated delinquent male youth. Students ranged in age from 16 to 18 years. Participants were chosen by the following criteria: (a) classified as learning disabled with a two grade level deficit in reading, (b) enrolled in a secondary school program, (c) average intellectual ability, and (d) resided in the rehabilitation center until the completion of the study. The experimental design was a multiple baseline across-subjects analysis. The students received daily instruction during small group sessions. The baseline and SQ3R condition consisted of seven procedures (McCormick & Cooper, 1991):

(a) **Passage Selection** - Passages of approximately 1,000 words long were randomly selected by students at the beginning of each session. Passages were taken and adapted from history textbooks and typed on 8 1/2" x 11" paper.

(b) **Word Preview** - Words judged difficult for the reading levels of assigned passages were put on 3" x 5" flashcards and reviewed with the student prior to reading the passage;
(c) Reading of Passage - Students silently read passage in group prior to retelling information.

(d) Order of Retelling - Students were called on to retell information from their respective passages depending upon the number on a card that they drew.

(e) Retelling - While waiting to retell students read magazines and put on headphones and listened to contemporary rock music. This ensured that students' retelling performance would not contaminate other students retelling performance.

(f) Feedback - Students received one point for every "information unit" they retold during a given session. Later, these points were exchanged for tangible reinforcers, such as candy bars, chips, or soft drinks.

(g) Group and Individual Procedures - Instructional procedures were conducted in small groups during both baseline and intervention conditions; retelling procedures were conducted individually (pp. 247-248).

The only difference between the baseline and the intervention condition was the introduction of the SQ3R for instruction. The findings of this first study revealed no functional relationship between study skills instruction and the retelling percentages after reading from an expository text. The lack of a functional relationship directly contrasts with the findings of Alexander (1985) and Douge (1983) which used elementary students with learning disabilities.

Experiment 2 was developed to investigate effects of differing text length on students retelling. Ten students, from the same center, who did not participate in Experiment 1 served as participants in Experiment 2. The
selection criteria were the same as in Experiment 1. Also, the general instructional procedures were the same as in Experiment 1 with the following exceptions: (a) the word preview was eliminated; (b) the token economy was replaced with self-graphing of the number of "information units" retold; and (c) following baseline, an alternating treatments design was used rather than a reversal design. The three conditions were analyzed during the alternating treatments design in the study (McCormick & Cooper, 1991) were as follows:

(a) SQ3R Long/Review (Baseline) - The SQ3R Long/Review procedures used for baseline was identical to the SQ3R procedures used in Experiment 1.

(b) SQ3R Short/Review - The SQ3R Short/Review procedure used 300-word reading passages rather than the 1,000-word reading passages used during the SQ3R Long/Review. Further, the SQ3R Short/Review procedure used only 4 minutes to review the material rather than the 10 minutes used during the SQ3R Long/Review procedure.

(c) SQ3R Short/Prompt - The SQ3R Short/prompt procedure was the same as the SQ3R Short/Review procedure with the exception that the teacher provided prompts for "information units" during the Recite period of the SQ3R training (pp. 255).

Results from Experiment 2 demonstrated a functional relationship between the size of passage read and percentage of "information units" retold. All students retold more "information units" when reading from 300-word passages than when reading 1,000-word passages. Data also showed that retelling did not appreciably differ with or without prompting.
Experiment 3 examined whether secondary students with learning disabilities retold more "information units" from 300-word passages when using the SQ3R than when not (McCormick & Cooper, 1991). Nine male students, from the same center, who did not participate in Experiments 1 or 2 served as participants. The selection criteria were the same as in Experiments 1 and 2. Also, the general instructional procedures, as well as the baseline and SQ3R procedures, were the same as those reported in Experiment 1. The only differences in procedure from Experiments 1 and 2 were that: (a) 300-word reading passages were used rather than 1,000-word reading passages and the reading time was reduced, and (b) the points system used in Experiment 1 was replaced with self-graphing of the number of "information units" retold. A combination reversal and multiple-baseline across subjects was used to assess students retelling performance. Baseline conditions (i.e., no SQ3R instruction) were the same as in Experiment 1. The intervention consisted of the same SQ3R instruction provided in Experiment 1. Results of Experiment 3 provided no clear differentiation between the baseline and the SQ3R training. Further, the results failed to offer adequate support for the use of the SQ3R with secondary students with learning disabilities (McCormick & Cooper, 1991).

McCormick and Cooper (1991) discussed several outcomes of these three experiments. First, the results failed to support the suggested use of SQ3R with secondary learning disabled students. These results are in direct contrast with previous findings with elementary students with learning disabilities (Alexander, 1985; and Douge, 1983). In addition, SQ3R was not a robust, powerful, instructional variable that produced important gains in literal comprehension, of secondary students. Second, the results suggest that
developers of expository texts should pay more attention to the sustaining effects of text coherence on reading comprehension. The more complex expository texts become, such as those used in high school, the more difficult it is to ensure text coherence and the less comprehensible it becomes. Third, they suggest that textbook publishers and teachers integrate shorter passages and reviews with longer passages when using expository materials. Finally, using shorter passages with more frequent reviews may be especially beneficial for students exhibiting reading problems.

Limitation Related to the Use of "Information Units" in the Assessment of Retelling

Several important factors limit the use of "information units" as a practical and viable measurement procedure. First, Alexander (1985) discussed the time consuming nature of the development of "information unit" protocols and the huge investment of resources needed to score and record students retellings. This suggests that "information units" are appropriate for research but not for teacher use. "Information units" are probably too time and resource laden to be practical for classroom applications. Second, McCormick and Cooper (1991) illustrated methodological problems with the use of "information units" as a dependent measure for retelling assessment. They claimed that it was difficult to determine the beginning and ending points of specific "information units." This difficulty of differentiating the occurrence and non-occurrence of a response is especially troubling from a scientific standpoint. A science of behavior is only as good as its definitions of behavior and the objectivity of its measurement systems (Barlow & Hersen, 1984; Johnston & Pennypacker, 1980; Tawney & Gast, 1984). The science of behavior is based upon the
analysis of variability between the behavior and its environment. It is through this analysis that functional relationships are revealed between the behaviors and their interaction with the environment. Unfortunately, additional uncontrolled variability is introduced to an analysis when the definitions of behavior do not specify the beginning and ending points of a response. Future research should attempt to develop more precise measurement procedures that are easier to use. Developments such as these will greatly enhance and extend the emerging science of behavior.

Conclusion

This review of literature examined definitions and research related to reading comprehension assessed with retelling. Developmental and cognitive psychologists have defined, researched, and developed classroom curriculums designed to improve the reading and language processing of students. In addition, other theoretical perspectives, such as behavior analysis, are also beginning to research and evaluate phenomena related to reading comprehension. Recent findings and developments show promise both for research and classroom instruction. For example, retelling is established as an objective and reliable student-centered assessment procedure. Students control both the quantity and quality of information retold. This active participation by students coincides with contemporary definitions of reading comprehension (Tierney, 1990) that stress the need continual engagement in the reading process and the importance of curriculum relevant to the everyday life experiences of students. Educators must use empirically sound interventions to maximize opportunities to learn to read now that a formative data base is established for reading comprehension. The continued
development, research, and classroom adoption of measurably superior
instructional strategies (e.g., retelling procedures) will enhance students'
reading comprehension and success in school.
CHAPTER III
METHOD

This section describes the participants, setting, procedures, and the experimental design used in the study. The dependent variables are defined and their measurement is discussed. Also included is a list and description of the materials that were used during the study.

Participants

Eight students, 9 to 11 years of age, attending an urban elementary school served as participants. Two Chapter 1 and Chapter 2 remedial reading and mathematics specialists conducted the initial screening of participants for the study (an explanation of Chapter 1 and Chapter 2 services at this school is provided in Appendix A). These remedial teachers reviewed students' files for potential participants using the following criteria: (a) the students performed below the fiftieth percentile in total reading and below the thirtieth percentile in reading comprehension on the Comprehensive Test of Basic Skills (1990); (b) the students were not receiving Chapter 1 services in reading; (c) the students were recommended for remedial reading by their regular classroom teacher because of academic and reading difficulties in their classroom; (d) the students regularly attended school; and (e) the students would be cooperative, motivated, and benefit from the extra instruction in reading. Ten fourth graders and 11 fifth graders were identified as possible participants. The students,
and 11 fifth-graders were identified as possible participants. The students, parents, teachers, principal, and support staff received a verbal description of the purpose and procedures prior to the study. Each parent or guardian received a letter of support from the school's principal and gave written permission for their child to serve as a participant (Appendix B). The experimenter also called each parent to discuss the study, explain the selection process, and answer any question prior to beginning data collection. Two fourth-grade referrals were not accepted because of behavior problems and subsequent suspensions. One fifth-grade student was not accepted because he did not have adequate prerequisite decoding skills necessary for this study. After the parental permissions were received, the experimenter randomly selected from the remaining students, four from each grade to serve as participants. Each student’s name was put on a 2" by 3" index card and put into a separate hat according to grade. After thoroughly shaking the covered hat to ensure that the names would be well mixed, the experimenter individually pulled out four names of the participants for each grade.

Standardized test scores for total reading and reading comprehension indicated that all these students had significant reading problems that put them "at risk" for academic failure. One fifth-grade student received tutorial services one day a week for students with specific learning disabilities. All the students received reading, math, social studies, science, written language, and health instruction in the regular education classroom. These students also participated in art, Spanish, music, and physical education with their regular education classmates. All of the fourth-grade students and 3 of the 4 fifth grade students received additional help twice a week from the Chapter 2, remedial math
Specific individual student characteristics are presented in Tables 1 and 2.

**Setting**

The setting was an urban elementary school in a midwestern city. At the beginning of the study, 359 students, kindergarten through fifth grade were enrolled. Students' national mean score was at the 63rd percentile in mathematics and 49th percentile in reading on The Comprehensive Test of Basic Skills (1990). The majority of the students percentile scores fall within the average academic achievement ranges nationally. The socioeconomic composition of students was 183 males and 176 female, 158 white, 197 black, and 4 other minorities. 197 of the families receive public assistance and are eligible for free or reduced school lunches.

The study was conducted in a 3.5 by 7 m materials storage room. This room was used for storing construction paper, textbooks, and filing cabinets with teacher materials. Teachers also used this room as a work area. The room was clean, quiet, and well illuminated and contained a .75 by 1.25 m work table and two plastic chairs. The work table and chairs were used for the individual reading instruction. The experimenter met individually with each student for approximately 15 to 20 minutes between 9:10 a.m. to 11:30 a.m. Every attempt was made to schedule students sessions during independent seatwork rather than during teacher directed instruction. Figure 1 diagrams the setting.
Table 1

Grade 4: Student Characteristics

<table>
<thead>
<tr>
<th>Student</th>
<th>Gender</th>
<th>Yrs./Mon.</th>
<th>Grade</th>
<th>Total Reading</th>
<th>Reading Comp.</th>
<th>Academic Func.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>M</td>
<td>9.5</td>
<td>4</td>
<td>33</td>
<td>30</td>
<td>&quot;At Risk&quot;</td>
</tr>
<tr>
<td>Angelo</td>
<td>M</td>
<td>10.5</td>
<td>4</td>
<td>18</td>
<td>18</td>
<td>&quot;At Risk&quot;</td>
</tr>
<tr>
<td>Rita</td>
<td>F</td>
<td>9.3</td>
<td>4</td>
<td>33</td>
<td>24</td>
<td>&quot;At Risk&quot;</td>
</tr>
<tr>
<td>Aaron</td>
<td>M</td>
<td>10.3</td>
<td>4</td>
<td>36</td>
<td>29</td>
<td>&quot;At Risk&quot;</td>
</tr>
</tbody>
</table>

a  Comprehensive Test of Basic Skills - Standardized Achievement Test

Results: National Percentiles Equivalents for Grade Level 3.7.

b  Teacher Judgment
Table 2

Grade 5: Student Characteristics

<table>
<thead>
<tr>
<th>Students</th>
<th>Gender</th>
<th>Age</th>
<th>School</th>
<th>Grade</th>
<th>Total</th>
<th>Reading</th>
<th>Comp.</th>
<th>Academic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>M</td>
<td>10.8</td>
<td></td>
<td>5</td>
<td></td>
<td>3.2&lt;sup&gt;c&lt;/sup&gt;</td>
<td>3.3&lt;sup&gt;c&lt;/sup&gt;</td>
<td>SLD&lt;sup&gt;d&lt;/sup&gt;</td>
</tr>
<tr>
<td>Porsha</td>
<td>F</td>
<td>11.9</td>
<td></td>
<td>5</td>
<td></td>
<td>37</td>
<td>26</td>
<td>&quot;At Risk&quot;</td>
</tr>
<tr>
<td>Walter</td>
<td>M</td>
<td>11.1</td>
<td></td>
<td>5</td>
<td></td>
<td>21</td>
<td>15</td>
<td>&quot;At Risk&quot;</td>
</tr>
<tr>
<td>Wendy</td>
<td>F</td>
<td>10.5</td>
<td></td>
<td>5</td>
<td></td>
<td>38</td>
<td>29</td>
<td>&quot;At Risk&quot;</td>
</tr>
</tbody>
</table>

<sup>a</sup> Comprehensive Test of Basic Skills - Standardized Achievement Test Results: National Percentiles Equivalents for Grade Level 3.7.

<sup>b</sup> Teacher Judgment

<sup>c</sup> Woodcock-Johnson PsychoEducational Battery - Revised: Grade Equivalent

<sup>d</sup> Specific Learning Disabilities
Figure 1 - Diagram of Instructional Setting
**Experimenter**

The experimenter was a third-year doctoral candidate majoring in applied behavior analysis with an emphasis in special education at The Ohio State University. He obtained a Bachelor of Arts degree at St. John's University majoring in history, psychology, social science, and secondary education. He completed a Master of Science degree in Special Education with an emphasis in severe learning and behavioral disorders. The experimenter had 4 years experience teaching middle school and high school students with emotional and behavioral disorders in Minnesota and North Dakota. He conducted research and served as an educational consultant in elementary classrooms for the past 2 years.

**Definition and Measurement of Dependent Variables**

The dependent variables measured in this study included (a) retelling assessments, (b) transfer of training, and (c) student satisfaction. All sessions were tape recorded using audio-cassette tapes to produce permanent products of retelling.

**Definition of Dependent Variables**

**Retelling Assessments.** Retelling assessments were defined as the number of key words or descriptive phrases retold that were directly related to the passage read by the student. Key words and descriptive phrases were retold with no response prompts from the experimenter. Students controlled the number, speed, and specific items retold during the one-minute retelling assessments. The unit of analysis for retelling assessment was the number of correct and incorrect key words or descriptive phrases related to the reading passage retold during a one-minute counting period. The retelling assessment
was conducted after the student had completely read the entire passage and had completed a one-minute oral reading assessment.

**Transfer of training.** Transfer of training was defined as the effect repeated readings had on retelling and reading fluency after reading new, unread passages following the completion of the experimental manipulations. The unit of analysis for recall of text and oral reading fluency were the same as used during the other conditions of the study. The purpose of the assessment for transfer of improved retelling and reading fluency was to provide a measure of generalization across unread passages.

**Reading Passages**

The student read orally passages ranging from 170 to 210 words with a median 192 words from the *Reading for Concepts Series* (Liddle, 1977). Written permission was obtained, from the publisher, to duplicate these reading passages for use in this study (Appendix C). The experimenter, in consultation with the Chapter One reading teacher, selected appropriate reading levels for each student. Standardized test results as well as informal teacher assessments were used by the Chapter One teacher in determining an appropriate reading level for each student. Passages were chosen that were both appropriate and challenging to the students' current reading level. See Appendix D for a sample reading passage.

To ensure that deficits in decoding skills did not confound the recall of text, the experimenter chose passages that reflected the receptive auditory vocabulary and word recognition skills of the students as indicated by their standardized test scores and the Chapter One teacher's observations. This was accomplished by choosing reading materials that were equivalent to the current
grade level reading skills of the students. Each passage was assessed and a grade level equivalent was determined using the Fry Readability Test (Fry, 1968). The reading passages ranged from a 3.0 to 6.5 grade level reading equivalent. See Tables 3 and 4 for the readability scores of individual baseline and intervention passages respectively.

Measurement of Dependent Variables

Prior to the beginning of the study, master protocols of key words and descriptive phrases were developed for each passage. Key words and descriptive phrases were defined as nouns (i.e., proper names, pronouns, and objects), verbs (i.e., action verbs), or descriptive phrases (i.e., important adjective, adverbs, and prepositional phrases that are relevant to the meaning of the passage). All forms of linking and state of being verbs (e.g., am, is, was, were), articles (e.g., the, an, a), conjunctions (e.g., and, or, but), and non-essential prepositions, adjectives, and adverbs were not included as key words or descriptive phrases. Omitted words or descriptive phrases were previously stated or that did not appreciably change or enhance the meaning of the passage. Each noun, verb, and descriptive phrase was listed on the back of each reading passage. Each noun, verb, or descriptive phrase was a discrete unit and was listed only once on the protocol. Therefore, words considered as either nouns or verbs (e.g., Noun - He ate two slices of pizza. Verb - He sliced the pizza into thirds), were only listed once under either category and counted correct for either usage.
Table 3

Baseline Passages: Individual and Group Readability (grade level) Summary

<table>
<thead>
<tr>
<th>Baseline Passages</th>
<th>Average Readability Score</th>
<th>Passages Readability Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.25</td>
<td>4.0 - 4.5</td>
</tr>
<tr>
<td>2</td>
<td>4.75</td>
<td>4.5 - 5.0</td>
</tr>
<tr>
<td>3</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>4</td>
<td>5.5</td>
<td>5.0 - 6.0</td>
</tr>
<tr>
<td>5</td>
<td>4.0</td>
<td>3.5 - 4.5</td>
</tr>
<tr>
<td>6</td>
<td>6.25</td>
<td>6.0 - 6.5</td>
</tr>
<tr>
<td>7</td>
<td>4.5</td>
<td>4.0 - 5.0</td>
</tr>
<tr>
<td>8</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>9</td>
<td>5.5</td>
<td>5.0 - 6.0</td>
</tr>
<tr>
<td>10</td>
<td>4.5</td>
<td>4.0 - 5.0</td>
</tr>
<tr>
<td>11</td>
<td>4.5</td>
<td>4.0 - 5.0</td>
</tr>
<tr>
<td>12</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>13</td>
<td>4.25</td>
<td>4.0 - 4.5</td>
</tr>
<tr>
<td>14</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
<tr>
<td>15</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
<tr>
<td>16</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
</tbody>
</table>
Table 3 (Continued)

<table>
<thead>
<tr>
<th>Baseline Passages</th>
<th>Average Readability Score</th>
<th>Passages Readability Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
<tr>
<td>18</td>
<td>4.25</td>
<td>4.0 - 4.5</td>
</tr>
<tr>
<td>19</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>20</td>
<td>3.5</td>
<td>3.0 - 4.0</td>
</tr>
<tr>
<td>21</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
<tr>
<td>22</td>
<td>5.75</td>
<td>5.5 - 6.0</td>
</tr>
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<td>23</td>
<td>4.75</td>
<td>4.5 - 5.0</td>
</tr>
<tr>
<td>24</td>
<td>4.0</td>
<td>3.5 - 4.5</td>
</tr>
<tr>
<td>25</td>
<td>3.75</td>
<td>3.5 - 4.0</td>
</tr>
<tr>
<td>26</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>27</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>28</td>
<td>4.0</td>
<td>3.5 - 4.5</td>
</tr>
<tr>
<td>29</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>30</td>
<td>6.0</td>
<td>5.5 - 6.5</td>
</tr>
</tbody>
</table>

Totals: Median Readability Level = 4.5 Overall Readability Range = 3.0 - 6.5
Table 4

Intervention Passages: Individual and Group Readability (grade level)

Summary

<table>
<thead>
<tr>
<th>Intervention Passages</th>
<th>Average Readability Score</th>
<th>Passages Readability Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6.0</td>
<td>5.5 - 6.5</td>
</tr>
<tr>
<td>2</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>3</td>
<td>5.0</td>
<td>4.5 - 5.5</td>
</tr>
<tr>
<td>4</td>
<td>4.5</td>
<td>4.0 - 5.0</td>
</tr>
</tbody>
</table>

Totals: Median Readability Level = 5.0 Overall Readability Range = 4.0 - 6.5
As the student retold information from the reading, the experimenter checked off the nouns, verbs, and descriptive phrases from the list on the back of the passage. Nouns, verbs, and descriptive phrases could only be checked off and counted once during the students' retell. Retells were counted correct if they matched the key words and descriptive phrases provided in the protocol list or if the student used a synonymous word or phrase that directly corresponded to the reading and one of the items on the protocol. Incorrect responses were defined as words or phrases that were not contained in the key word or descriptive phrase list and did not directly relate to the passage. An incorrect responses would be marked, for example, when a reading passage was about fishing in the Atlantic Ocean and during the retell the student referred to the Pacific Ocean which was not discussed in the passage. The experimenter wrote down the incorrect response at the bottom of the protocol. Corrects were recorded by counting the number of nouns, verbs, and descriptive phrases checked off during the students' retell. Incorrect responses were recorded by counting the number of errors the experimenter wrote down during the retell. Correct and incorrect frequencies were then recorded at the bottom of the protocol and charted on a Standard Celeration Chart (McGreevy, 1980; Pennypacker, Koenig, Lindsley, 1972).

Definition and Measurement of Collateral Dependent Variables

Oral reading fluency was also assessed. Oral reading fluency was considered a collateral, descriptive variable because the experimental manipulation focused on the relationship between retelling of key word or descriptive phrases from individual passages to repeated readings and not oral reading fluency.
Definition of Oral Reading Fluency

The definition of oral reading fluency was adapted from the Brosovich-McGurr (1991) study on the effects of repeated readings on oral reading fluency of secondary students with learning disabilities. Oral reading fluency was defined as the speed and accuracy of a student's oral reading. The unit of analysis for oral reading fluency was the number of correct and incorrect words read orally on reading passages selected from The Reading for Concepts Series (Liddle, 1977).

Measurement of Oral Reading Fluency

The students' were given a reading passage and asked by the experimenter to read the passage as fast as they could for one-minute and stop when they heard the buzzer go off from the count-down timer. The experimenter started the count-down timer as soon as the student uttered the first words from the passage. The experimenter followed along on a duplicate copy of the reading passage recording omissions, insertions, substitutions, and mispronunciation errors. The experimenter used an adapted miscue reading analysis procedures (Goodman and Burke, 1982) to show errors. The experimenter circled omitted words, drew an \( \wedge \) to represent inserted words, circled and drew \( \wedge \) under words to show substituted words, and underlined mispronounced words when the students made incorrect responses while reading. Whenever possible, the experimenter also wrote in the substituted or inserted word below the \( \wedge \) symbol. The starting and stopping points in the passages were represented by slashes (e.g., "/'.....went for pizza at the..... "/"). Brackets were used (e.g., "[......]") if a word or phrase was repeated and the student self-corrected his or her original response. Self-corrections were not
counted as incorrect responses. The total number of correctly read words and the total number of incorrectly read words were counted, recorded, and charted on Standard Celeration Charts.

**Procedures to Ensure Accuracy of Measurement**

Two independent observers verified the accuracy of measurement of the dependent variable. The experimenter scored the students retelling and oral reading fluency during the sessions and did not listen to the audiotapes. To ensure the accuracy of the measurement of the dependent variable, two independent observers were trained to conduct accuracy probes on the experimenter's observations by listening to audiotapes of the retelling and oral reading counting periods. Prior to the beginning of the study, the purpose of the investigation was explained to the two observers and they were trained by the experimenter to use the scoring and measurement procedures for retelling and oral reading fluency. The same two observers also practiced using the measurement procedure and scoring the number retells and oral reading fluency by listening to audiotapes of five pilot students on a sample passage. These passages were listened to until 100 percent accuracy was reached between the experimenter and the two observers. A further booster session was conducted by the experimenter with each observer at the beginning of the accuracy probes. The experimenter listened to one passage with the observers to ensure (a) adequate training was conducted on the scoring and measurement of retelling and oral reading fluency, (b) that the observers understood and could demonstrate how to calculate the accuracy percentages and record them on the data summary sheets (Appendix E), (c) that the observers understood the decision rules for calibrating discrepancies between
the experimenter's scoring and the observers scoring from the audiotapes, and
the procedures necessary for re-calibrating scores when discrepancies
appeared.

These observers reviewed audiotapes of the one minute-timed oral
readings and retelling assessments resulting from each session. Audiotapes
were randomly selected so that 40 percent of the sessions per student across
the entire experiment were assessed. Ten consecutive playing cards, ace
through 10 of hearts, were drawn to randomly select sessions for the accuracy
probes. Sessions were separated into sets of ten (e.g., 1 through 10, 11
through 20, 21 through 30, etc.). After shuffling, four playing cards were
randomly drawn that corresponded to four sessions in each set of sessions.
Accuracy probes were conducted on the four sessions. Correct and incorrect
frequencies were reported and recorded using the same scoring method as the
one described for the experimenter. Scores given by the second observer were
then compared to those given by the experimenter. If there was a discrepancy
of three or more errors on the retellings and five or more errors on the oral
reading fluency between the experimenter and observers frequency measures,
the two recorders reviewed the audiotape together to identify the source of
counting error. The minimum number of discrepancies thought to be
acceptable, that would not significantly alter the celeration results on the
Standard Celeration Chart, were three or more errors on the retellings and five
or more errors on the oral reading fluency. The incorrect count was corrected
and the correct frequency recorded on the data sheet and plotted on the
standard celeration chart.
To ensure accuracy of the timings, the observer reviewed the duration of reading on the audiotape and the duration of retells. As the audiotapes were reviewed the observer began a stopwatch when the first word of the passage was heard. The stopwatch was stopped when the observer heard the tone (i.e., the beep) on the tape signaling the student to stop reading or retelling. If there was a discrepancy of more than .5 seconds the experimenter retimed the reading passage or retell and used the timing closest to the accuracy check to recalculate the frequency per minute.

Procedural Integrity Measure

Integrity of the experimental procedures was assessed by having the audiotapes of the full sessions reviewed by an observer to verify the proper implementation of the procedures. Thirty percent of all the sessions across all the students were assessed for procedural integrity. A checklist (Appendices F and G) containing the specific sequence of instruction and feedback statements made by the experimenter was used to verify implementation of the procedures. If a discrepancy was found by the observer, he would have the experimenter listen to the tape of the session and discuss the discrepancy in the experimenters implementation of the procedures. The experimenter would then review the specific procedures with the second observer and verbally practice a sample session with the observer serving as student. This review and practice served to calibrate any drift from the stated procedures and ensure consistent application of the procedures through out the experiment.
Materials

The following materials were used:

1) Individual reading passages. Reading passages were duplicated from the Reading for Concepts Series: Books C and D (Liddle, 1976, 1977). Each passage was assessed and a readability level was determined using the Fry Readability Test (Fry, 1968). Passages were chosen that contained more than 170 words and whose readability was between 3.2 and 5.4 grade equivalent.

2) Key Word Scoring Key: Key Word Scoring Keys were duplicated on the back of each reading passage.

3) Experimenter/Observer Passages: Duplicate copies of the students passages were copied and used for scoring and recording purposes.

4) Wrist timer: An Armitron jogging watch with a digital display was used to time the oral readings of passages. The timer had a count down timer and beeped loudly at the end of one minute.

5) Stopwatch: Used to ensure accuracy of the passages.

6) Standard Celeration Charts: Used for the visual display of the data.

7) Pencils: Used for scoring and charting data.

8) Tape Recorder: Used to record all sessions on audiotapes.

9) High quality audio-cassette tapes: Served as a permanent product of all experimental sessions.

10) Rulers: Used to chart data on the Standard Celeration Chart.

Student Satisfaction

Student satisfaction was determined by an oral interview and written survey (Appendice H and I). Student satisfaction was presented in a table displaying the results of the student opinions related to the written survey.
Answers to interview question were compiled, a content analysis performed, and the results discussed. Student satisfaction was determined by comparing, analyzing, and summarizing the patterns of student opinions from the survey and interview.

Students completed an oral interview and a forced choice written survey at the conclusion of the experiment. The purpose of this interview and survey (Appendix H) was to assess students satisfaction with their participation in this study. The interview was conducted individually with each student of the study by an independent observer to ensure the students were not biased by the presence of the experimenter. The responses to the open-ended questions were audiotaped. Later that same week, the forced choice written survey (Appendix I) was administered by the experimenter. The experimenter read the survey questions aloud to the students during the regular time for the experiment had been conducted. Students anonymously noted their opinions by choosing one of the three answers.

The answers to the interview and forced-choice survey were used to determine overall consumer satisfaction with the experiment. Specifically, the interview and survey evaluated the likes and dislikes with regard to the individual readings, repeated readings, one-minute reading timings, and retelling assessment procedures. The survey was used to compare trends in satisfaction among individual students' and across the group of students. A content analysis of items was performed to analyze the pattern of students satisfaction resulting from the survey and interview.
Experimental Design

A combination ABAB reversal design (Barlow & Hersen, 1984) within students and multiple baseline across students (Baer, Wolf, & Risley, 1968) was used to analyze the effects of repeated readings on the number of words read correctly and incorrectly and the number of retells per minute for each student. A combined experimental design was used to increase the number of manipulations of the independent variable. Each multiple-baseline analysis compared the use of individual versus repeated readings across four students. One multiple-baseline analysis used fifth-grade students for the individual tier of the design and the other analysis used the fourth-grade students. A transfer condition was introduced after the completion of the second withdrawal condition with all students. The transference condition was the reintroduction of the repeated readings across two passages to demonstrate and replicate the effects of the repeated readings on retelling.

Experimental changes were based upon the effects of the charted data and being able to affirm the consequent in terms of the experimental design. A decision rule was used to determine when an experimental change should be made. Using the Standard Celeration Chart (McGreevy, 1980; Pennypacker et al., 1972) for the visual display of the data, the decision rule throughout the investigation was: 3 flat days of data where the celeration course (i.e., slope) multiplied by less than a X1.1 (i.e., read as "times 1.1"). If the celeration of retells divided or multiplied by less than X1.1 for more than 3 days a change in experimental condition was made.
An additional decision rule for changing the experimental condition was to affirm the consequent when introducing or withdrawing an experimental variable (Johnston & Pennypacker, 1980). Affirming the consequent was sufficient to suggest the existence of a functional relationship between the retelling of key points and descriptive phrases and the introduction or withdrawal of the repeated readings. For example, after making a change from retelling about individual passages to repeated readings on the first tier of a multiple-baseline, 3 or more days of consistent and stable data are needed on subsequent tiers prior intervening on those students. These 3 or more days of consistent and stable data on subsequent students increases the likelihood of affirming the consequent suggesting a functional relationship between the number of retells of key words or descriptive phrases and the introduction or withdrawal of the repeated readings under investigation with the first student in the multiple-baseline. The 3 or more days of consistent and stable data are consistent with established experimental procedures for making an experimental change using a multiple-baseline design (Baer et. al., 1968; Barlow & Hersen, 1982; Cooper et al., 1987; Johnston & Pennypacker, 1980).  

General Procedures

The reading procedures consisted of an assessment of reading accuracy, a one-minute assessment of reading fluency, and a one-minute assessment of retelling. These three components remained constant throughout the study. All sessions were tape recorded to provide a permanent record. The baseline condition used different reading passages during each session while during the intervention the same reading passage was used during each session.
Prior to each session the experimenter photocopied the appropriate reading passage for the student and the retelling keys to record the reading fluency and the number of retells. Also, the starting place on the tape recorder's counter for each session were written on the front of the cassette case so that specific sessions could be easily found in the future.

Students left their morning instruction during scheduled seatwork activities for 15 minutes of reading instruction with the experimenter. After a short rapport building discussion (e.g., "did you watch the basketball game last night?"), the experimenter started the tape recorder signalling the beginning the session. The experimenter recorded the student's name, date, day, condition, and session number each session. After identifying the session, the experimenter brought out the appropriate passage for the session and told the student: "Today we will be working on this passage. First, we will read through the passage together making sure you are reading it correctly. Next, we will do our one-minute timing where you will read the passage as fast as you can until you hear the buzzer. Finally, I will take the passage and you will tell me everything you can remember as fast as you can for one minute. Any questions?"

After a brief explanation of the sequence of activities, the student started orally reading the passage at a leisurely pace. The purpose of reading the passage with the experimenter prior to the one minute of reading fluency and retelling counting periods was to ensure that the student was reading the words correctly and had read the entire passage prior to being asked to retell information from the passage. The experimenter believed that it was necessary that the students read the entire passage correctly prior to the retell because
they may not have completed the whole passage during the one-minute assessment of reading fluency. By reading the whole passage, the experimenter exposed the student to the full content of each passage prior to the retelling assessment.

The student orally read the passage at a leisurely pace the first time focusing on the accuracy of word calling. The experimenter corrected reading errors as the student read. Specific error correction procedures were used to correct mispronunciations, substitutions, omissions, and changing tenses from singular to plurals, and vice versa. For example, an error in word calling would have occurred if the student substituted "is" for "was," "girl" for "girls", or "they" for "the boys." If a student made an error such as mispronouncing "Arctic" by saying "Attic," the investigator would stop the student at the end of the sentence in which the error occurred and point out the mispronunciation. The student would then have to point to the mispronounced word, pronounce the word correctly, and reread the sentence correctly before preceding onto the next sentence. If multiple errors were made within the same sentence the investigator would correct each error individually before rereading the sentence. If the student was repeatedly having a problem reading the word correctly, the investigator had the student read the corrected word or words in context prior to rereading the whole sentence. To do this the experimenter would have the student read two or three words before and after the corrected word so that the word would be read correctly in context prior to rereading the whole sentence. The students did not read the next sentence in the passage until they had correctly read the entire sentence containing the error in question.
Assessment for oral reading fluency followed reading for accuracy. The experimenter said: "It is now time to read for speed. Starting from the beginning I want you to read as fast as you can for one minute. I will start the stop watch as soon as you say the first word. When you hear the buzzer from the stop watch at the end of the one-minute timing you can stop reading."

After the student completed the one-minute assessment of oral reading fluency, the experimenter retrieved the reading passage and put it away in a folder so it could not be used as a visual cue during the retelling. The investigator said: "We are now going to work on comprehension. When you are ready, I want you to tell me, just as fast as you can in one-minute, everything you can remember about the story you just read. I will start the stop watch as soon as you say your first word relating to the story. When you hear the buzzer from the stop watch at the end of the one-minute you can stop retelling. Do you have any questions before we start?" The experimenter began the count down timer on the stop watch as soon as the student started retelling information about the story. As the student orally retold information about the story, the experimenter checked the corresponding key words and phrases on the key located on the back of the reading passage.

No contingent praise, feedback, or response prompts were provided to the students in relationship to their retelling (e.g., "You did better than yesterday." "You had five more than last session." "Now really concentrate on the retell so that you can get more items than yesterday"). General nonspecific social praise for effort and participation, however, was given (e.g., "You're doing a great job and I really enjoyed today's session, excellent work, I like the way you are working so hard"). These same procedures for praise, feedback, and
response prompts were used in both the baseline (i.e., individual reading passages) and intervention (i.e., repeated reading passages). The only change from baseline to the intervention was that the student read and re-read the same passage during the repeated reading sessions.

**Experimental Procedures**

**Baseline I**

Students read an individual reading passages each session during baseline. Reading fluency and the number of key words and descriptive phrases retold were measured and recorded over time to provide baselines for analyzing behavior change prior to the introduction of the repeated readings. All students remained in baseline until at least 3 consecutive days of flat, stable data appeared. The criterion for flat, stable data was defined as celeration trends shown on the Standard Celeration Chart that multiplied by less than X1.1 per week. Also, students remained in baseline until a sufficient number of days, in subsequent tiers of the multiple-baseline, were achieved to affirm the consequent and suggest a functional relationship in the previous tier.

**Intervention I**

The repeated readings were introduced after baseline stability. Key words and descriptive phrases retold were measured and recorded over time to assess the effects of individual passages and repeated readings in relationship to the number of retells. Repeated reading were first applied to Corey in fourth grade and Ricky in fifth grade. When their retellings stabilized after with 4 or more flat days of data in the repeated readings condition, the intervention was withdrawn and the students returned to the baseline condition. All the students remained in the repeated readings condition until at least 4 days of flat, stable
data as defined under Baseline 1. Also, students remained in the repeated readings condition until a sufficient number of days, in subsequent tiers of the multiple-baseline, were achieved to affirm the consequent and establish a functional relationship in the previous tier.

**Baseline II**

The dependent measures remained the same as in previous conditions and separate individual passages per session were re-introduced. All the students remained in baseline II until at least 3 consecutive days of flat, stable data appeared. Also, students remained in baseline until a sufficient number of days, in subsequent tiers of the multiple-baseline, were achieved to affirm the consequent and establish a functional relationship in the previous tier.

**Intervention II**

The repeated readings were re-introduced during this condition. Repeated reading were first re-applied with Corey in fourth grade and Ricky in fifth grade. The use of repeated readings was re-introduced with subsequent students after at least 3 days of flat, stable data were shown to affirm the consequent with Corey and Ricky. When the students' reading levels stabilized with 4 or more flat days of data in the repeated readings condition, a new repeated readings passage was introduced to demonstrate the transference effects of repeated readings across passages. All students remained in the second repeated readings condition until at least 4 days of flat, stable data. Also, students remained in the repeated readings condition until a sufficient number of days, in subsequent tiers of the multiple-baseline, were achieved to affirm the consequent and establish a functional relationship in the previous tier.
Transfer Condition

After retellings stabilized during the second repeated readings condition and a sufficient number days had been provided to affirm the consequent on previous tiers of the multiple-baseline, a new reading passage was introduced to examine the effects of repeated readings across passages. The transfer condition was implemented to demonstrate similar effects on the number of key word or descriptive phrases retold when using repeated readings. Two to three different passages were used in this condition with all the students. The criteria for moving onto a new reading passage was at least 4 days of flat, stable data that could affirm the consequent on the previous tiers of the multiple-baseline across students. The transfer condition with repeated reading was first demonstrated with Corey in fourth grade and Ricky in fifth grade.
CHAPTER IV
RESULTS

Overview

This chapter presents the results of the study comparing the effects of individual and repeated reading passages on comprehension retelling and oral reading fluency. Comprehension retelling and oral reading fluency performances are summarized including Tables of individual student data. Medians, ranges, celerations, and performance changes for baseline, intervention, and transfer conditions are provided for retelling comprehension and oral reading fluency. Also, a verification of the accuracy of measurement is presented and the procedural integrity assessments are described. Finally, a summary is provided of the student satisfaction assessment. Both the results of the student satisfaction survey and individual comments during the oral interviews are described and summarized.

The terminology used in the data presentation may be unfamiliar to some readers. Listed below are descriptions of terms and definitions to aid the reader in understanding the results:

Learning Opportunities: Precision teachers use the term learning opportunities as a synonymous term for the number of errors in student performance. Unlike the majority of educators that view errors as something to be avoided, precision teachers believe that errors provide important
opportunities to learn. Therefore, learning opportunities for precision teachers are seen as an important variable for making data-based instructional decisions (Lindsley, 1991).

Celerations and Celeration Lines: Celeration represent the proportional change in the number of correct or incorrect responses per minute across time. These celerations provide a measure of learning trends across time. Since the changes in responding are proportional, celerations are said to be multiplying (i.e., acceleration) when the trend goes from lower to higher numbers across time. Celerations are dividing (i.e., decelerating) when the trend goes from higher to lower number across time. Multiplying celeration lines (i.e., accelerating trends in data paths) are represented by an "x" symbol followed a figure that represents the changes rate/per minute/across time (e.g. x1.25). Dividing celeration (i.e., decelerating trends in data paths) lines are represented by a "/" symbol followed a figure that represents the changes rate/per minute/across time (e.g. /1.25) (Koenig, 1972; McGreevy, 1983; Pennypacker, Koenig, & Lindsley, 1972).

Performance Change: Performance changes represent the proportional change from one day to the next. The performance change provides a measure of session to session variability. A performance change can also be used to show the overall variability across time like it has in this study. A performance change is calculated by finding the lowest number in a condition, putting the Standard Celeration Chart Finder's (i.e., the Chart Finder is a lamiated strip that is layed over the Chart to help determine the celerations of data paths) "1 arrow" on that number directly
below the highest number (i.e., on the same day line of the Standard Celeration Chart); and counting up the chart finder until you reach the highest point. This gives a celeration value that represents the performance change or session-to-session variability between the highest and lowest points in a condition (McGreevy, 1983).

**Data Presentation:** The data presented depicts the retelling and oral reading fluency of individual students. These data on the Standard Celeration Charts show the correct and incorrect key words and descriptive phrases retold (i.e., retelling) and the correct and incorrect words read orally. On the Standard Celeration Chart, a dot (.) represents the number correct. The (x) represents the number incorrect of learning opportunities. The dashes (-) on the 1 line are record floors defined by the amount of time spent during the retelling and oral reading fluency assessments. The celeration rates are labeled with an "x" (i.e., the multiplication sign) to show accelerating learning. Celerations for learning opportunities were not shown because of the low number errors exhibited by students during both retelling and oral reading fluency assessments.

**Summary of Results**

**Accuracy of Measurement**

The observers conducted point-by-point comparison of correct and incorrect frequencies and the total duration of the sessions using the same measurement procedures as the experimenter for both retelling and oral reading fluency. Students scores were re-calibrated if there were 3 or more discrepancies on the retelling assessments or more than 5 discrepancies on the oral reading fluency between the experimenter and observers' scoring. If re-
calibration was necessary the experimenter and observer again reviewed the audiotaped session to establish an accurate measure of retelling and oral reading fluency. Re-calibration was conducted on 15 of the 305 sessions reviewed during the study.

Individual students' accuracy measures for retelling are presented by grade level in Tables 5 and 6. Fifth-grade students' accuracy measures for oral reading fluency are presented in Table 7. The accuracy percentage for the point-by-point comparison of correct and incorrect responses during retelling, oral reading fluency, and the total duration of the sessions were calculated using an adapted formula for calculating agreement scores for permanent products (Cooper, Heron, & Heward, 1987).

\[
\text{agreement} \times \frac{\text{agreement + disagreement}}{\text{agreement + disagreement}} \times 100 = \% \text{ of Accuracy}
\]

The number of agreements divided by the total of agreements and disagreements, multiplied by 100 equals the percentage of accuracy. The accuracy percentage between the experimenter and the independent observers for total duration of the sessions was 100% for both retelling and oral reading fluency. The mean accuracy percentage on the point-by-point comparison for all 8 students averaged 94% with individual students accuracy percentages ranging from 92% to 96%. A point-by-point analysis on oral reading fluency was only conducted on the 4 fifth-grade students. The mean accuracy percentage on the point-by-point comparison for fifth-graders oral reading fluency averaged 99% with individual students accuracy percentages ranging from 98% to 99%.
Table 5

Grade 4: Summary of Retelling Accuracy Probes

<table>
<thead>
<tr>
<th>Students</th>
<th>Agreements</th>
<th>Discrep.</th>
<th>Percentage</th>
<th>Total # of Sessions</th>
<th># of Accuracy Probes Conducted</th>
<th># of Accuracy Probes</th>
<th># of Re-calibrated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>570</td>
<td>51</td>
<td>92</td>
<td>87</td>
<td>37</td>
<td>43</td>
<td>3</td>
</tr>
<tr>
<td>Angelo</td>
<td>692</td>
<td>55</td>
<td>93</td>
<td>83</td>
<td>34</td>
<td>41</td>
<td>3</td>
</tr>
<tr>
<td>Rita</td>
<td>1078</td>
<td>80</td>
<td>93</td>
<td>97</td>
<td>39</td>
<td>40</td>
<td>4</td>
</tr>
<tr>
<td>Aaron</td>
<td>843</td>
<td>57</td>
<td>94</td>
<td>98</td>
<td>40</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Overall</td>
<td>3183</td>
<td>243</td>
<td>93</td>
<td>365</td>
<td>150</td>
<td>41</td>
<td>10</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6

Grade 5: Summary of Retelling Accuracy Probes

<table>
<thead>
<tr>
<th>Students</th>
<th>Total # of Point-by-Point Agreements</th>
<th>Total # of Point-by-Point Discrep.</th>
<th>Overall Percentage</th>
<th>Total # of Accuracy Accuracy</th>
<th># of Probes Conducted</th>
<th># of Accuracy Probes</th>
<th># of Re-Calibrated Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>1041</td>
<td>56</td>
<td>95</td>
<td>92</td>
<td>37</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Porsha</td>
<td>714</td>
<td>41</td>
<td>94</td>
<td>93</td>
<td>38</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Walter</td>
<td>1237</td>
<td>55</td>
<td>96</td>
<td>98</td>
<td>40</td>
<td>41</td>
<td>1</td>
</tr>
<tr>
<td>Wendy</td>
<td>1312</td>
<td>60</td>
<td>95</td>
<td>98</td>
<td>40</td>
<td>41</td>
<td>1</td>
</tr>
<tr>
<td>Overall</td>
<td>4304</td>
<td>212</td>
<td>95</td>
<td>381</td>
<td>155</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Students</td>
<td>Total # of Agreements</td>
<td>Total # of Discrep.</td>
<td>Total # of Point-by-Point Percentage</td>
<td>Overall Total # of Sessions Conducted</td>
<td># of Accuracy Probes</td>
<td># of Accuracy Re-Calibrated</td>
<td># of Session Probes</td>
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<tr>
<td>----------</td>
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<td>--------------------------------------</td>
<td>---------------------------------------</td>
<td>---------------------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Ricky</td>
<td>6422</td>
<td>70</td>
<td>99</td>
<td>92</td>
<td>37</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>Porsha</td>
<td>6708</td>
<td>82</td>
<td>99</td>
<td>93</td>
<td>38</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Walter</td>
<td>7163</td>
<td>57</td>
<td>99</td>
<td>98</td>
<td>40</td>
<td>41</td>
<td>1</td>
</tr>
<tr>
<td>Wendy</td>
<td>6478</td>
<td>150</td>
<td>98</td>
<td>98</td>
<td>40</td>
<td>41</td>
<td>3</td>
</tr>
<tr>
<td>Overall</td>
<td>26,771</td>
<td>359</td>
<td>99</td>
<td>381</td>
<td>155</td>
<td>41</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 7: Summary of Oral Reading Fluency Accuracy Probes**

- Ricky: Total # of Agreements 6422, Total # of Discrep. 70, Total # of Point-by-Point Accuracy 92, Overall # of Accuracy Probes 37, # of Accuracy Re-Calibrated 0.
- Porsha: Total # of Agreements 6708, Total # of Discrep. 82, Total # of Point-by-Point Accuracy 93, Overall # of Accuracy Probes 38, # of Accuracy Re-Calibrated 0.
- Walter: Total # of Agreements 7163, Total # of Discrep. 57, Total # of Point-by-Point Accuracy 98, Overall # of Accuracy Probes 40, # of Accuracy Re-Calibrated 1.
- Wendy: Total # of Agreements 6478, Total # of Discrep. 150, Total # of Point-by-Point Accuracy 98, Overall # of Accuracy Probes 40, # of Accuracy Re-Calibrated 3.
- Overall Totals: Total # of Agreements 26,771, Total # of Discrep. 359, Total # of Point-by-Point Accuracy 381, Overall # of Accuracy Probes 155, # of Accuracy Re-Calibrated 4.
**Procedural Integrity Measure**

Integrity of the experimental procedures was assessed by having the audiotapes of full sessions reviewed by an observer to verify the proper implementation of the procedures. Thirty percent of all sessions across all the students were assessed for procedural integrity. Results of the procedural integrity measures indicated that the experimenter correctly implemented the procedures in 99% of the sessions. The only drift from the stated procedures was a prompt redirecting a student back on-task during the retelling assessment. All other procedures were followed throughout the entire study.

**Assessment of Retells**

Retelling assessment data are presented in two separate multiple baseline analyses of 4 fourth-graders and 4 fifth graders in Figures 2 through 9. Retelling data obtained from the 8 students during baseline, repeated readings, and transfer conditions are presented as the number of key words and descriptive phrase correctly and incorrectly retold per minute. Tables 8 and 9 present medians and ranges for the number of correct and incorrect key words and descriptive phrase retold per minute (i.e., retelling) by grade for individual students. During Baseline I, the median number of key words and descriptive phrases correctly retold per minute was 13 ranging from 9 to 18 retells for all students. With the introduction of the repeated reading, students multiplied the number of key words and descriptive phrases retold each session. The median number of correct retells per minute, during Intervention I, was 30 ranging from 22 to 43 retells for all students. The number of key words and descriptive phrases retold per minute divided following a withdrawal of the intervention and
Figure 2 - Grade 4: Recall of Text - Corey
Figure 3 - Grade 4: Recall of Text - Angelo
Figure 3 (Continued)

CALENDAR WEEKS

COUNT PER MINUTE

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University
DEPOSITOR  AGENCY

SUCCESSIVE CALENDAR DAYS

Ang
BFH
W. J. Sweeney
W. J. Sweeney
W. J. Sweeney
W. J. Sweeney
Figure 4 - Grade 4: Recall of Text - Rita
J. Sweeney  SUCCESSIVE CALENDAR DAYS
MANAGER University
W. J. Sweeney  W. J. Sweeney  W. J. Sweeney
TER  COUNTER  CHARTER
Recall of Text - Rita
Figure 5 - Grade 4: Recall of Text - Aaron
Figure 5 (Continued)

CALENDAR WEEKS

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University
DEPOSITOR  AGENCY
SUCCESSIVE CALENDAR DAYS
W. J. Sweeney  W. J. Sweeney  W. J. Sweeney
TIMER  COUNTER
Figure 6 - Grade 5: Recall of Text - Ricky
SUCCESSIVE CALENDAR DAYS

W. J. Sweeney
Manager
State University

W. J. Sweeney
Timer

W. J. Sweeney
Counter

Ricky
Behavior

W. J. Sweeney
5th Grade

Retells of Keywords

COUNTED

MIN HRS

COUNTING PERIOD FLOORS

W. J. Sweeney
SUCCESSIVE CALENDAR DAYS

x 1.6

7X

32

TRANS. 1

TRANS. 2

x 1.4

100

INT. 2

CALENDAR WEEKS

16 FB 92

15 MR 92

12 AP 92

7 JN 92

10 MY 92

 behaviours

behavior research co

box 994 kansas city kans 66103

MANAGER BEHAVIOR LABEL COUNTED
Figure 7 - Grade 5: Recall of Text - Porsha
Recall of Text - Porsha
Figure 7 (Continued)

CALENDAR WEEKS

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University  W. J. Sweeney
DEPOSITOR  AGENCY  TIMER  COUNTER
SUCCESSIVE CALENDAR DAYS

PORT
BEF
W. J. Sweeney
CH.
Figure 8 - Grade 5: Recall of Text - Walter
Recall of Text - Walter
Figure 8 (Continued)
Figure 9 - Grade 5: Recall of Text - Wendy
<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
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<tr>
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<td>35</td>
<td>19</td>
<td>48</td>
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<tr>
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<td>14 to 42</td>
<td>12 to 24</td>
<td>23 to 61</td>
<td>14 to 38</td>
<td>27 to 52</td>
</tr>
<tr>
<td>Aaron</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
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<td>15 to 35</td>
<td>13 to 21</td>
<td>10 to 33</td>
<td>13 to 29</td>
<td>20 to 49</td>
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<tr>
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<td>8 to 24</td>
<td>10 to 61</td>
<td>4 to 38</td>
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<td>Transfer 1</td>
<td>Transfer 2</td>
</tr>
<tr>
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<td>------------</td>
<td>----------------</td>
<td>------------</td>
<td>----------------</td>
<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>Ricky</td>
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<td>32</td>
<td>15</td>
<td>32</td>
<td>25</td>
<td>38</td>
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<td></td>
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<td>14 to 43</td>
<td>10 to 22</td>
<td>17 to 61</td>
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<td>16 to 61</td>
</tr>
<tr>
<td>Porsha</td>
<td>9</td>
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<td>10.5</td>
<td>23</td>
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<td>28</td>
</tr>
<tr>
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<td>5 to 14</td>
<td>12 to 32</td>
<td>5 to 14</td>
<td>11 to 32</td>
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<td>23 to 44</td>
<td>17 to 27</td>
<td>19 to 61</td>
<td>16 to 37</td>
<td>28 to 55</td>
</tr>
<tr>
<td>Wendy</td>
<td>16.5</td>
<td>38</td>
<td>23</td>
<td>52</td>
<td>27.5</td>
<td>53.5</td>
</tr>
<tr>
<td></td>
<td>9 to 26</td>
<td>21 to 44</td>
<td>19 to 28</td>
<td>18 to 61</td>
<td>16 to 47</td>
<td>26 to 61</td>
</tr>
<tr>
<td>Overall Totals</td>
<td>14</td>
<td>35</td>
<td>18.5</td>
<td>37.5</td>
<td>26.25</td>
<td>40.25</td>
</tr>
<tr>
<td></td>
<td>5 to 26</td>
<td>12 to 44</td>
<td>5 to 28</td>
<td>11 to 61</td>
<td>8 to 47</td>
<td>116 to 289</td>
</tr>
</tbody>
</table>
a return to baseline condition. During Baseline II, the median number correct retells was 16 ranging from 10 to 23 for all students. The reintroduction of the repeated readings, during Intervention II, effectively multiplied the numbers of key words and descriptive phrases retold by students. The median number of correct retells per minute, during Intervention II, was 29 ranging from 21 to 52 retells for all students. Two transfer conditions were conducted to assess the effects of the repeated readings procedure on unread reading passages. Data revealed similar results to that of the original intervention conditions. During Transfer I, the median number of key words and descriptive phrases correctly retold per minute was 23 ranging from 20 to 30. During Transfer II, the median number correctly retold was 37 ranging from 23 to 53 retells. Students committed very few learning opportunities when retelling key words and descriptive phrases from the reading passages. The number of learning opportunities retold averaged less than zero and never exceeded 4 throughout the experiment.

Celerations lines indicated how rapidly per week students improved on the retelling of key words and descriptive phrases during each condition. Tables 10 and 11 present celerations for the number of correct key words and descriptive phrase retold per minute by individual students. During Baseline I, the median celeration multiplied by x1.05 for all students. The median celeration for all students improved during Intervention I by multiplying by x1.25. Again, the median celeration decreased in Baseline II with all students by multiplying by a x1.05 per week. The re-introduction of the repeated readings, during Intervention II, indicated an improving median celeration multiplying by
Table 10

Grade 4: Celerations for Number of Correct Retells

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>x1.0</td>
<td>x1.8</td>
<td>x1.1</td>
<td>x1.25</td>
<td>x1.5</td>
<td>x1.3</td>
</tr>
<tr>
<td>Angelo</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.0</td>
<td>x1.2</td>
<td>x1.8</td>
<td>x1.8</td>
</tr>
<tr>
<td>Rita</td>
<td>x1.1</td>
<td>x1.25</td>
<td>x1.0</td>
<td>x1.5</td>
<td>x1.4</td>
<td>x1.25</td>
</tr>
<tr>
<td>Aaron</td>
<td>x1.1</td>
<td>x1.25</td>
<td>x1.0</td>
<td>x1.4</td>
<td>x1.25</td>
<td>x1.25</td>
</tr>
</tbody>
</table>

Overall Totals

<table>
<thead>
<tr>
<th></th>
<th>Medians</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x1.05</td>
<td>x1.0 to x1.1</td>
</tr>
<tr>
<td></td>
<td>x1.25</td>
<td>x1.25 to x1.8</td>
</tr>
<tr>
<td></td>
<td>x1.0</td>
<td>x1.0 to x1.1</td>
</tr>
<tr>
<td></td>
<td>x1.3</td>
<td>x1.2 to x1.4</td>
</tr>
<tr>
<td></td>
<td>x1.45</td>
<td>x1.25 to x1.5</td>
</tr>
<tr>
<td></td>
<td>x1.27</td>
<td>x1.25 to x1.8</td>
</tr>
</tbody>
</table>
Table 11

Grade 5: Celerations for Number of Correct Retells

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>x1.1</td>
<td>x1.5</td>
<td>x1.0</td>
<td>x1.4</td>
<td>x1.6</td>
<td>x1.8</td>
</tr>
<tr>
<td>Porsha</td>
<td>x1.0</td>
<td>x1.8</td>
<td>x1.1</td>
<td>x1.5</td>
<td>x1.5</td>
<td>x1.25</td>
</tr>
<tr>
<td>Walter</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.1</td>
<td>x1.7</td>
<td>x1.4</td>
<td>x1.25</td>
</tr>
<tr>
<td>Wendy</td>
<td>x1.1</td>
<td>x1.25</td>
<td>x1.1</td>
<td>x1.8</td>
<td>x1.6</td>
<td>x1.4</td>
</tr>
</tbody>
</table>

Overall Totals

| Medians   | x1.05       | x1.37          | x1.1       | x1.6           | x1.55      | x1.32      |
| Ranges    | x1.0 to x1.1 | x1.25 to x1.8  | x1.0 to x1.1 | x1.4 to 1.8   | x1.25 to x1.6 | x1.25 to x1.8 |
x1.45 per week. Celerations comparable to those of the intervention conditions were indicated during the assessment to the transfer passages. During Transfer I and Transfer II, the median celeration multiplied by x1.5 and x1.27 respectively. The larger median celerations during the intervention and transfer conditions provided evidence that the repeated readings were effective at improving the number of key words and descriptive phrases retold over time. The higher celerations during the intervention and transfer conditions showed that the weekly celerations were greater during repeated readings than during baseline.

The median performance changes for retelling followed similar patterns of session-to-session variability for all students during each condition of the study. Tables 12 and 13 present median performance changes for the number of correct key words and descriptive phrase retold per minute by individual students. During Baseline I, the median performance change multiplied by x2.4 for all students. The median performance change for all students improved during Intervention I multiplying by x2.95. Again, the median performance change decreased in Baseline II with all students multiplying by x1.85. The re-introduction of the repeated readings, during Intervention II, indicated an improving median performance change for all students multiplied by x3.5. Performance changes comparable to those of the intervention conditions were indicated during the assessment to the transfer passages. During Transfer I and Transfer II, the median performance changes multiplied by a x3.25 and x3.5 respectively. The larger median performance changes during the intervention and transfer conditions show that increasing the number of key words and descriptive phrases retold over time improved during the repeated readings.
### Grade 4: Performance Changes for Number of Correct Retells

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>x2.0</td>
<td>x2.5</td>
<td>x2.0</td>
<td>x1.8</td>
<td>x2.2</td>
<td>x2.5</td>
</tr>
<tr>
<td>Angelo</td>
<td>x2.9</td>
<td>x1.9</td>
<td>x1.5</td>
<td>x2.2</td>
<td>x8.0</td>
<td>x3.5</td>
</tr>
<tr>
<td>Rita</td>
<td>x2.0</td>
<td>x3.8</td>
<td>x2.0</td>
<td>x3.0</td>
<td>x3.0</td>
<td>x2.2</td>
</tr>
<tr>
<td>Aaron</td>
<td>x2.7</td>
<td>x2.0</td>
<td>x1.8</td>
<td>x3.5</td>
<td>x2.5</td>
<td>x2.5</td>
</tr>
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</table>

**Overall Totals**

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<th>Ranges</th>
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</thead>
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<td>x2.0 to x2.9</td>
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<tr>
<td></td>
<td>x2.25</td>
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<tr>
<td></td>
<td>x1.9</td>
<td>x1.5 to x2.0</td>
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<td>x2.6</td>
<td>x1.8 to x3.5</td>
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<td>x2.75</td>
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</tr>
<tr>
<td></td>
<td>x2.5</td>
<td>x2.2 to x3.5</td>
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</tbody>
</table>
Table 13

Grade 5: Performance Changes for Number of Correct Retells

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
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<td>Ricky</td>
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<td>x3.2</td>
<td>x2.0</td>
<td>x3.0</td>
<td>x4.5</td>
<td>x6.0</td>
</tr>
<tr>
<td>Porsha</td>
<td>x2.5</td>
<td>x2.9</td>
<td>x2.8</td>
<td>x3.0</td>
<td>x3.5</td>
<td>x3.0</td>
</tr>
<tr>
<td>Walter</td>
<td>x2.2</td>
<td>x3.0</td>
<td>x1.7</td>
<td>x4.0</td>
<td>x2.8</td>
<td>x2.0</td>
</tr>
<tr>
<td>Wendy</td>
<td>x2.8</td>
<td>x2.2</td>
<td>x1.5</td>
<td>x4.0</td>
<td>x3.0</td>
<td>x4.0</td>
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Overall Totals

<table>
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Oral Reading Fluency

Oral reading fluencies are presented in two separate multiple baseline analyses of 4 fourth-graders and 4 fifth graders in Figures 10 through 19. Tables 14 and 15 present medians and ranges for the number of correct and incorrect key words and descriptive phrase retold per minute by individual students. Oral reading fluency was obtained from each of the 8 students during baseline, repeated readings, and transfer conditions are presented as the number of correct and incorrect words read orally per minute. During Baseline I, the median number of words read correctly per minute was 113, ranging from 82 to 137 words for all students. With the introduction of the repeated reading, students showed improvements in the number of words read correctly each session. The median number of correct words read per minute for all students, during Intervention I, was 176 ranging from 125 to 205 words read. A withdrawal of the intervention and a return to baseline showed a dividing of the number of words read per minute across time. During Baseline II, the median number of words correctly read was 120 ranging from 81 to 158 words for all students. The reintroduction of the repeated readings, during Intervention II, effectively multiplied the numbers of words read by students across time. The median number of words read correctly per minute, during Intervention II, was 215 ranging from 136 to 252 words for all students. Data on the two transfer passages revealed similar results to that of the original intervention conditions. During Transfer I, the median number of key words read correctly per minute was 177 ranging from 101 to 206 words. During Transfer II, the median number of words correctly read was 206 ranging, from 130 to 226 words for all students. Although the variability of learning opportunities was slightly greater than that
Figure 10 - Grade 4: Oral Reading Fluency - Corey
Figure 10 (Continued)

CALENDAR WEEKS

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University  W. J. Sweeney
DEPOSITOR  AGENCY  TIMER
SUCCESSIVE CALENDAR DAYS
COUNTER

COUNT PER MINUTE

0  10  20  30  40  50  60  70  80  90  100

0  .001  .005  .01  .05  .1  .15  .5  1  5  10  50  100  500  1000
Figure 11 - Grade 4: Oral Reading Fluency - Angelo
### Successive Calendar Days

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<tr>
<th>Date</th>
<th>Day</th>
<th>Week</th>
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<td>4</td>
<td>17</td>
</tr>
<tr>
<td>27 OC 91</td>
<td>8</td>
<td>17</td>
</tr>
<tr>
<td>24 NV 91</td>
<td>12</td>
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<td>17</td>
</tr>
<tr>
<td>20 JR 92</td>
<td>20</td>
<td>17</td>
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</tbody>
</table>

### Oral Reading Fluency - Angelo

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<th>Role</th>
<th>Age</th>
<th>Label</th>
<th>Counted</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. J. Sweeney</td>
<td>Manager</td>
<td>4th</td>
<td>BEHAV</td>
<td>107.5</td>
</tr>
<tr>
<td>W. J. Sweeney</td>
<td>Timer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W. J. Sweeney</td>
<td>Counter</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W. J. Sweeney</td>
<td>Charter</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Figure 12 - Grade 4: Oral Reading Fluency - Rita

J. O. Cooper  J. O. Cooper  W. J. Sweeney  SUCCESSIVE CALENDAR DAYS
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University  W. J. Sweeney  W. J. Sweeney
DEPOSITOR  AGENCY  TIMER  COUNTER
J. Sweeney SUCCESSIVE CALENDAR DAYS
MANAGER University W. J. Sweeney W. J. Sweeney W. J. Sweeney
TIMER COUNTER COUNTER CHARTER

Rita 4th Grade Oral Reading Fluency
BEHAVIOR AGE LABEL COUNTED

<table>
<thead>
<tr>
<th>MIN</th>
<th>HRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>0</td>
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<td>200</td>
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</tr>
<tr>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>1000</td>
<td>1000</td>
</tr>
</tbody>
</table>

Reading Fluency - Rita
Figure 12 (Continued)

SUCCESSIVE CALENDAR DAYS

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University
DEPOSITOR  AGENCY

W. J. Sweeney  W. J. Sweeney  W. J. Sweeney
TIMER  COUNTER  COUNTER
### SUCCESSIVE CALENDAR DAYS

<table>
<thead>
<tr>
<th>J. Sweeney</th>
<th>4th Grade</th>
<th>Retells of Keywords</th>
</tr>
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<tbody>
<tr>
<td>MANAGER</td>
<td>BEHAVIOR</td>
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<tr>
<td>University</td>
<td>AGE</td>
<td></td>
</tr>
<tr>
<td>W. J. Sweeney</td>
<td>LABEL</td>
<td></td>
</tr>
<tr>
<td>TIMER</td>
<td>COUNTED</td>
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<tr>
<td>W. J. Sweeney</td>
<td></td>
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<tr>
<td>COUNTER</td>
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<td></td>
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<tr>
<td>W. J. Sweeney</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHARTER</td>
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### MIN HRS

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<tr>
<th>30</th>
<th>40</th>
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<th>70</th>
<th>80</th>
<th>90</th>
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<td>90</td>
<td>100</td>
<td>110</td>
<td>120</td>
<td>130</td>
<td>140</td>
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</tbody>
</table>

### COUNTER PERIOD FLOORS

<table>
<thead>
<tr>
<th>20</th>
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<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>50</td>
<td>100</td>
</tr>
</tbody>
</table>

### DAILY BEHAVIOR CHART (IN: 99N)

- 5 CYCLE: 140 DAYS (30 WKS)
- BEHAVIOR: RESEARCH CO
- BOX: KANSAS CITY, KANS 66103

---

**CALCULATIONS**

- INT. 2
- TRANS. 1
- TRANS. 2

- x1.5
- 48
- x1.4
- 30.5
- x1.25
- 42

---

**J. Sweeney SUCCESSIVE CALENDAR DAYS**

- W. J. Sweeney
- W. J. Sweeney
- W. J. Sweeney
Figure 13 - Grade 4: Oral Reading Fluency - Aaron
Figure 14 - Grade 5: Oral Reading Fluency - Ricky
SUCCESSIVE CALENDAR DAYS

W. J. Sweeney
University

W. J. Sweeney
Timer

W. J. Sweeney
Counter

BEHAVIOR

W. J. Sweeney
CHARTER

Oral Reading Fluency - Ricky
Figure 15 - Grade 4: Oral Reading Fluency - Porsha
SUCCESSIVE CALENDAR DAYS

Porsha 5th Grade Oral Reading Fluency

W. J. Sweeney CHARTER

U. Sweeney SUCCESSIVE CALENDAR DAYS
DAILY BEHAVIOR CHART

E CYCLE: 140 DAYS (20 WKS)
BEHAVIOR RESEARCH CENTER
KANSAS CITY KANS 66103

SUCCESSIVE CALENDAR DAYS

J. Sweeney W. J. Sweeney W. J. Sweeney
MANAGER Wuther CHARTER
W. J. Sweeney TIMER COUNTER

Oral Reading Fluency

5th Grade

AGE LABEL COUNTEO
Figure 16 - Grade 4: Oral Reading Fluency - Walter
J. Sweeney  SUCCESSIVE CALENDAR DAYS
Manager University W. J. Sweeney W. J. Sweeney W. J. Sweeney
Day Timer Counter Charter

Reading Fluency - Walter
Figure 16 (Continued)

J. O. Cooper  J. O. Cooper  W. J. Sweeney
SUPERVISOR  ADVISER  MANAGER
W. J. Sweeney  The Ohio State University
DEPOSITOR  AGENCY

SUCCESSIVE CALENDAR DAYS
W. J. Sweeney  W. J. Sweeney
TIMER  COUNTER
Figure 17 - Grade 4: Oral Reading Fluency - Wendy
CALENDAR WEEKS

Wendy 5th Grade
SUCCESSIVE CALENDAR DAYS

Wendy 5th Grade
Oral Reading Fluency

Reading Fluency - Wendy
Figure 17 (Continued)

CALENDAR WEEKS

19 J R 92

16 FB 92

15 MR 92

12 AP 92

COUNT PER MINUTE

0

.001

.005

.01

.05

1

.1

.5

10

50

100

500

1000

J. O. Cooper

J. O. Cooper

W. J. Sweeney

SUPERVISOR

ADVISER

MANAGER

W. J. Sweeney

The Ohio State University

DEPOSITOR

AGENCY

W. J. Sweeney

W. J. Sweeney

SUCCESSIVE CALENDAR DAYS

W. J. Sweeney

W. J. Sweeney

TIMER

COUNTER

...
Table 14

*Grade 4: Medians and Ranges for Number of Correct Words Read Orally*

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>113</td>
<td>160</td>
<td>117</td>
<td>229</td>
<td>177</td>
<td>208</td>
</tr>
<tr>
<td></td>
<td>91 to 122</td>
<td>103 to 234</td>
<td>93 to 139</td>
<td>120 to 278</td>
<td>123 to 213</td>
<td>144 to 264</td>
</tr>
<tr>
<td>Angelo</td>
<td>107.5</td>
<td>164</td>
<td>109</td>
<td>184</td>
<td>135</td>
<td>190</td>
</tr>
<tr>
<td></td>
<td>48 to 128</td>
<td>109 to 221</td>
<td>103 to 118</td>
<td>103 to 244</td>
<td>93 to 213</td>
<td>105 to 259</td>
</tr>
<tr>
<td>Rita</td>
<td>137.5</td>
<td>201</td>
<td>158</td>
<td>252</td>
<td>206</td>
<td>209</td>
</tr>
<tr>
<td></td>
<td>105 to 174</td>
<td>141 to 270</td>
<td>131 to 194</td>
<td>168 to 304</td>
<td>145 to 263</td>
<td>159 to 265</td>
</tr>
<tr>
<td>Aaron</td>
<td>82.5</td>
<td>125</td>
<td>81</td>
<td>136</td>
<td>101</td>
<td>130.5</td>
</tr>
<tr>
<td></td>
<td>60 to 96</td>
<td>65 to 120</td>
<td>70 to 87</td>
<td>69 to 176</td>
<td>73 to 144</td>
<td>61 to 174</td>
</tr>
<tr>
<td>Overall</td>
<td>110.25</td>
<td>162</td>
<td>113</td>
<td>206.5</td>
<td>156</td>
<td>199.5</td>
</tr>
<tr>
<td>Totals</td>
<td>48 to 174</td>
<td>65 to 270</td>
<td>70 to 194</td>
<td>69 to 304</td>
<td>73 to 263</td>
<td>61 to 265</td>
</tr>
</tbody>
</table>
### Table 15

**Grade 5: Medians and Ranges for Number of Correct Words Read Orally**

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>Median</td>
<td>98.5</td>
<td>199</td>
<td>105</td>
<td>206</td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>Ranges</td>
<td>75 to 131</td>
<td>120 to 264</td>
<td>69 to 123</td>
<td>116 to 292</td>
<td>87 to 239</td>
</tr>
<tr>
<td>Porsha</td>
<td>Median</td>
<td>135</td>
<td>175</td>
<td>142.5</td>
<td>218</td>
<td>179</td>
</tr>
<tr>
<td></td>
<td>Ranges</td>
<td>105 to 145</td>
<td>130 to 221</td>
<td>101 to 163</td>
<td>145 to 258</td>
<td>131 to 227</td>
</tr>
<tr>
<td>Walter</td>
<td>Median</td>
<td>114</td>
<td>205</td>
<td>124.5</td>
<td>213</td>
<td>153</td>
</tr>
<tr>
<td></td>
<td>Ranges</td>
<td>78 to 131</td>
<td>120 to 280</td>
<td>92 to 156</td>
<td>121 to 328</td>
<td>110 to 208</td>
</tr>
<tr>
<td>Wendy</td>
<td>Median</td>
<td>133.5</td>
<td>177.5</td>
<td>132</td>
<td>230</td>
<td>177.5</td>
</tr>
<tr>
<td></td>
<td>Ranges</td>
<td>107 to 150</td>
<td>140 to 270</td>
<td>111 to 148</td>
<td>135 to 270</td>
<td>107 to 234</td>
</tr>
<tr>
<td>Overall</td>
<td>Median</td>
<td>123.75</td>
<td>188.25</td>
<td>128.25</td>
<td>215.5</td>
<td>178.25</td>
</tr>
<tr>
<td>Totals</td>
<td>Ranges</td>
<td>75 to 150</td>
<td>120 to 280</td>
<td>69 to 163</td>
<td>116 to 328</td>
<td>87 to 239</td>
</tr>
</tbody>
</table>
for the assessment of retells, they were not high enough to adversely affect oral reading fluency. The median number of learning opportunities did not exceed 5 for all students across all conditions, with the exception of Walter and Rita. During Baseline II, they had learning opportunity medians of 7 and 6 respectively.

Celerations lines described how rapidly students improved on their oral reading fluency during each condition. During Baseline I, the median celeration for words read correctly multiplied by x1.0 for all students (i.e., which is no change). During Intervention I, the median celeration for words read correctly improved multiplying by x1.25 for all students. Again, the median celeration of words read correctly worsened in Baseline II multiplying by x1.0 for all students. The re-introduction of the repeated readings, during Intervention II, indicated an improving median celeration for words read correctly multiplying by x1.45 for all students. Celerations of words read on the transfer passages were comparable to those exhibited the intervention conditions. During Transfer I and Transfer II, the median celeration of words read correctly multiplied by x1.25 and x1.27 per minute respectively. The larger median celerations during the intervention and transfer conditions were evidence that the repeated readings were effective at increasing the fluency of words read orally over time. Tables 16 and 17 present celerations for the number of correct words read per minute by individual students. The higher celerations during the intervention and transfer conditions showed that the rate of learning was greater under the repeated readings than during baseline.
Table 16
Grade 4: Celerations for Number of Correct Words Read Orally

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>x1.0</td>
<td>x1.5</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.5</td>
<td>x1.25</td>
</tr>
<tr>
<td>Angelo</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.4</td>
<td>x1.5</td>
</tr>
<tr>
<td>Rita</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.1</td>
<td>x1.25</td>
<td>x1.25</td>
<td>x1.1</td>
</tr>
<tr>
<td>Aaron</td>
<td>x1.0</td>
<td>x1.25</td>
<td>x1.0</td>
<td>x1.4</td>
<td>x1.2</td>
<td>x1.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medians</td>
</tr>
<tr>
<td>Ranges</td>
</tr>
<tr>
<td>Students</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Ricky</td>
</tr>
<tr>
<td>Porsha</td>
</tr>
<tr>
<td>Walter</td>
</tr>
<tr>
<td>Wendy</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Overall Totals</th>
<th>Medians</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x1.0</td>
<td>x1.0 to x1.0</td>
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<td></td>
<td>x1.25</td>
<td>x1.25 to x1.25</td>
</tr>
<tr>
<td></td>
<td>x1.0</td>
<td>x1.0 to x1.0</td>
</tr>
<tr>
<td></td>
<td>x1.32</td>
<td>x1.25 to 1.4</td>
</tr>
<tr>
<td></td>
<td>x1.25</td>
<td>x1.25 to x1.6</td>
</tr>
<tr>
<td></td>
<td>x1.27</td>
<td>x1.15 to x1.5</td>
</tr>
</tbody>
</table>
The median performance changes for oral reading fluency followed similar patterns of session to session variability for all students during each condition of the study. During Baseline I, the median performance change for words read correctly multiplied by x2.4 for all students. The median performance change for all students improved during Intervention I multiplying by x2.95 for all students. Again, the median performance change for words read correctly worsened in Baseline II multiplying by x1.85. The re-introduction of the repeated readings, during Intervention II, indicated an improving median performance change for words read correctly with all students multiply by x3.5. Performance changes on oral reading fluency comparable to those of the intervention conditions were indicated during the assessment to the transfer passages. During Transfer I and Transfer II, the median performance changes for words read correctly multiplied by x3.25 and x3.5 respectively. The larger median performance changes during the intervention and transfer conditions were evidence that the repeated readings were effective at increasing the oral reading fluency over time. Tables 18 and 19 present median performance changes for oral reading fluency per minute by individual students.

**Student Satisfaction**

At the conclusion of the experiment, all 8 students participated in an individualized oral interview with an independent observer. The students were asked a series of questions during an oral interview and given a 15 question forced choice survey designed to solicit students opinions about the experiment. Overall, the students said they enjoyed participating in the experiment and would participate in similar reading studies in the future. Students said they liked participating in the reading study because, "It helped
Table 18

Grade 4: Performance Changes for Number of Correct Words Read Orally

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corey</td>
<td>x1.5</td>
<td>x2.25</td>
<td>x1.7</td>
<td>x2.5</td>
<td>x2.0</td>
<td>x2.0</td>
</tr>
<tr>
<td>Angelo</td>
<td>x3.0</td>
<td>x2.0</td>
<td>x1.2</td>
<td>x2.8</td>
<td>x3.0</td>
<td>x2.8</td>
</tr>
<tr>
<td>Rita</td>
<td>x1.8</td>
<td>x2.0</td>
<td>x1.6</td>
<td>x1.9</td>
<td>x2.0</td>
<td>x1.9</td>
</tr>
<tr>
<td>Aaron</td>
<td>x1.6</td>
<td>x2.5</td>
<td>x1.3</td>
<td>x2.5</td>
<td>x2.0</td>
<td>x3.0</td>
</tr>
</tbody>
</table>

Overall Totals

<table>
<thead>
<tr>
<th></th>
<th>Medians</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medians</td>
<td>x1.7</td>
<td>x1.5 to x3.0</td>
</tr>
<tr>
<td>Ranges</td>
<td>x2.15</td>
<td>1.9 to x3.8</td>
</tr>
<tr>
<td></td>
<td>x1.45</td>
<td>x1.2 to x1.7</td>
</tr>
<tr>
<td></td>
<td>x2.5</td>
<td>x1.9 to x2.8</td>
</tr>
<tr>
<td></td>
<td>x2.0</td>
<td>x2.0 to x3.0</td>
</tr>
<tr>
<td></td>
<td>x2.4</td>
<td>x1.9 to x3.0</td>
</tr>
</tbody>
</table>
Table 19

**Grade 5: Performance Changes for Number of Correct Words Read Orally**

<table>
<thead>
<tr>
<th>Students</th>
<th>Baseline 1</th>
<th>Intervention 1</th>
<th>Baseline 2</th>
<th>Intervention 2</th>
<th>Transfer 1</th>
<th>Transfer 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ricky</td>
<td>x1.9</td>
<td>x2.5</td>
<td>x1.8</td>
<td>x2.9</td>
<td>x2.8</td>
<td>x2.6</td>
</tr>
<tr>
<td>Porsha</td>
<td>x1.5</td>
<td>x2.0</td>
<td>x1.6</td>
<td>x2.0</td>
<td>x1.9</td>
<td>x1.9</td>
</tr>
<tr>
<td>Walter</td>
<td>x1.7</td>
<td>x2.0</td>
<td>x1.8</td>
<td>x2.8</td>
<td>x2.0</td>
<td>x2.0</td>
</tr>
<tr>
<td>Wendy</td>
<td>x1.2</td>
<td>x2.2</td>
<td>x1.2</td>
<td>x2.5</td>
<td>x2.2</td>
<td>x1.8</td>
</tr>
</tbody>
</table>

**Overall Totals**

<table>
<thead>
<tr>
<th></th>
<th>Medians</th>
<th>Ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>x1.6</td>
<td>x1.2 to x1.9</td>
</tr>
<tr>
<td></td>
<td>x2.1</td>
<td>x2.0 to x2.5</td>
</tr>
<tr>
<td></td>
<td>x1.7</td>
<td>x1.2 to x1.8</td>
</tr>
<tr>
<td></td>
<td>x2.4</td>
<td>x2.0 to x2.9</td>
</tr>
<tr>
<td></td>
<td>x2.1</td>
<td>x1.9 to x2.8</td>
</tr>
<tr>
<td></td>
<td>x1.95</td>
<td>x1.8 to x2.6</td>
</tr>
</tbody>
</table>
me improve my reading." Other students stated that, "I just knew I was getting better. I could see my reading improving because I was able to read faster and tell Mr. Sweeney more about a story after reading it a couple of times."

Students comments seemed to focus more on their improvements in oral reading fluency than on the retelling procedures. When asked what he felt was the most important part of the study, one student said: "Reading fast, and then faster, and then faster." Students comments were very positive with one girl saying that the highlight of her school day was going to work with Mr. Sweeney. "The reading work is fun....school can be pretty boring but I like working on my reading with Mr. Sweeney." One student stated that the best part of participating in the reading study was that "I got out of part of spelling....that was really the best part of working with Mr. Sweeney."

Many of the students said that reading out loud in front of classmates was "embarrassing" because they did not believe they were very good at it. One fourth-grade boy summed it up this way: "I do not like to read out loud in class because everyone is looking at me. When everyone is looking at me, I make mistakes and get frustrated.......When I am working with Mr. Sweeney, I like reading out loud because it is fun." Other students felt that some of the reading passage were a little dull and other believed that too many days were spent reading the same passage. "I know it helped my reading to re-read the same story over and over, however, I do not think we needed to spend quite so many days on the same story and we should have moved on to a different one" (i.e., story), stated a fifth-grader.
Table 20 presents results of the students responses to the forced choice written survey. The observer explained that all the students needed to do was circle the choice (i.e., yes, sometimes, no) that most accurately reflected how they felt about a particular question. The students were given the choice to either read the survey silently and recorded their own responses or have the observer read and record their responses. Results of the survey indicated that the students had an overwhelmingly positive experience in the study. All the students believed that participation in the study improved their reading and 7 of the 8 students believed that retelling was a good way to assess reading comprehension.
<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Yes</th>
<th>Sometimes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1). Participating in the reading program was fun.</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2). Using repeated readings (i.e., rereading the same story) is a good way to practice reading.</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3). I disliked reading aloud.</td>
<td>1</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>4). I liked when I had to read a story as fast as I could.</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5). I was bored during the repeated readings (i.e., rereading the same passage over and over again in each session).</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Survey Questions</td>
<td>Yes</td>
<td>Sometimes</td>
<td>No</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-----------</td>
<td>----</td>
</tr>
<tr>
<td>6). Retelling everything you can remember is a good way to show what you understood from a reading passage.</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7). Retelling everything you can remember was frustrating.</td>
<td>1</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>8). The stories used were interesting.</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>9). I think my reading has improved since the beginning of the reading program.</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10). I do not think this reading program was a good way to teach reading.</td>
<td>2</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>11). I was excited when asked to retell everything I could remember about a story.</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>12). I could tell that my reading was improving when we used the repeated readings.</td>
<td>8</td>
<td></td>
<td>8</td>
</tr>
</tbody>
</table>
Table 20 (Continued)

<table>
<thead>
<tr>
<th>Survey Questions</th>
<th>Yes</th>
<th>Sometimes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>13). I would participate in this reading program again.</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14). I do not think I read any better since the beginning of this reading program.</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>15). I was able to retell more information about a story because of rereading it during several sessions (i.e., repeated readings) rather than only reading it once.</td>
<td>7</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER V
DISCUSSION

This study investigated the use of repeated readings as an instructional method to improve recall of text with elementary students who were academically at-risk. Specifically, the study focused on increasing the number of key words and descriptive phrases retold per minute on story passages through the use of repeated readings. The study examined the effects of recall of text during baseline, repeated readings, and transfer conditions. The effects were also examined in a multiple-baseline analysis across students design. In addition, this study examined the effects of repeated readings on oral reading fluency as an important collateral variable. This chapter contains a discussion of the results relative to the six research questions. Also included are limitations of the study, implications for classroom practice, and suggestions for additional research. A summary of the present study are presented in the final section of Chapter V.

Research Question One

Will repeated readings be functionally related to an improvement in the recall of text? The results from this study clearly show a functional relationship between instruction with repeated readings and improvement in recall of text. For all 8 of the students participating in the study, the frequency of correct retells improved during the repeated readings conditions. The median frequency was 30 retells per minute during repeated readings compared to a median
frequency of 15 per minute during baseline. Similar effects of the repeated reading instruction occurred with two unread passages during the Transfer condition. All four of the repeated reading passages (i.e., 2 intervention and 2 transfer) showed similar improvements in learning (i.e., celerations) and performance changes.

Students initially scored higher (i.e., "bottoms up") on two of the repeated reading passages when compared with the lowest scores in the baseline conditions. All students had steeper celeration trend lines on the Standard Celeration Chart during repeated readings as compared to the baseline trend lines. Further, the overall performance changes was greater for all students during the repeated readings conditions than the baseline conditions which is indicative of session to session variability and overall learning.

Although all students showed improvement with repeated readings compared to baseline assessments, similar changes among the different repeated reading passages did not result in "bottoms up" and steeper trend lines. For instance, although 7 of the 8 students had at least one intervention passage with a higher entry score than the first passage for repeated reading, only 3 students scores revealed "bottoms up" on new repeated reading passages, and no students demonstrated "bottoms up" and steeper trend lines on all four intervention passages. Similarly, for five students, the celerations during subsequent intervention passages multiplied (i.e., accelerated) at lower frequencies than during the first intervention passage. The results showed improved retelling during repeated reading, but the continued linear improvement with each new passage instructed with repeated readings did not occur. In addition, results indicated that the third repeated readings passage
used during the first transfer condition was substantially more difficult for students. Students had lower frequencies of correct retelling at the beginning of the passage and lower frequencies of correct retelling at the conclusion of the passage. Even though the grade level readability (i.e., 5.0 grade level equivalency) of this passage was not the most difficult of the passages used in the present study, the lower levels of correct retells and lower celerations for six students were evidence that it presented more difficulties than the other intervention passages for the students.

This study expanded and extended the use of retelling as a measure of literal comprehension. The improvements in retelling by students in the present experiment were similar to the results of other researchers using retelling to assess comprehension (e.g., Adams, Carnine, & Gersten, 1982; Alexander, 1985; Douge, 1983). Methodologically, this study was consistent with previous research using retelling as a measure of literal comprehension (e.g., Adams et al., 1982; Alexander, 1985; Brosovich-McGurr, 1991; Douge, 1983; McCormick & Cooper, 1991). This study used key words and descriptive phrases which was an adapted form of the Adams et al. (1982) "information units". The "information units" procedure occurs in research that use recall of text as a measure of comprehension (Alexander, 1985; Douge, 1983; McCormick & Cooper, 1991).

An interesting outcome of this study was the low number of incorrect (i.e., learning opportunities) key words and descriptive phrases retold by the students. In fact, the number of learning opportunities rarely exceeded 3 for all the students across all conditions. The vast majority of learning opportunities for retelling ranged from 0 to 1 for all students. Retelling data were extremely
stable showing a small spread of learning opportunities (i.e., errors). Learning opportunities were not an influential variable with students retelling since the learning opportunities remained low and stable.

The vast majority of research using recall of text as a measure of comprehension apply statistical significance rather than a functional analysis to analyze the effect of an independent variable (e.g., Adams et al., 1982; Gambrell, Koskinen, & Kapinus, 1991; Gambrell, Pfeiffer, & Wilson, 1985; Morrow, 1985). Functional relationships were demonstrated among retellings and study skills (e.g., Alexander, 1985; Douge, 1983). The present research, however, was the first study to show functional relationships among repeated readings and retellings. Further, the present research was the first to show positive effects using frequency of retelling as the dependent variable. Brosovich-McGurr (1991) also used frequency of retelling but showed little improvement over time.

**Research Question Two**

*Will improvements in the number of key words and descriptive phrases retold during repeated reading instruction transfer to previously unread passages at equivalent grade levels?* Improvements in the number of correct retells were found during both passages used for repeated readings and in the two transfer passages. Data indicated that the effects of repeated reading transferred to two unread passages at equivalent grade levels in the transfer condition. The replication across several unread passage of equivalent difficulty was important because it reaffirmed the effectiveness of repeated reading for improving retelling performance. Further, the transfer effect confirms the use of repeated practice to improve recall of text.
The present research was the first to show the transfer and subsequent improvements in the frequency of retelling to unread passages. These findings are similar to Precision Teaching investigations using repeated readings to improve oral reading fluency (e.g., Brosovich-McGurr, 1991; Carroll et al., 1991; Lee, 1990; Sweeney et al., 1992). Results of these Precision Teaching studies show that repeated readings reliably improve the oral reading fluency to 180 to 200 words per minute. At this frequency, improvements transfer across numerous unread passages. The similarity of outcomes in the present research and the Precision Teaching studies investigating oral reading fluency provide additional documentation of the usefulness of repeated readings as an instructional procedure.

**Research Question Three**

*What will be the celerations of key words and descriptive phrases retold per minute?* The celerations of correct retells showed a definite improvement during repeated readings when compared with baseline conditions for all students. Results indicated similar multiplying celeration for the number of correct retells across all four repeated reading passages. Improving celerations of correct retelling were strong indicators that students were becoming more fluent in their retelling of the passages. The slopes of the retelling celerations multiplied faster as students retold more information related to the story in a shorter period of time. During the repeated readings, students learned faster and were more accurate than during baseline. These improving celerations suggest repeated practice is an important factor for developing fluent retelling. Teachers who provide repeated practice sufficient to build fluent retelling increase the likelihood of recall of text improving, maintaining, and transferring
with new reading materials (Barrett, Beck, Binder, Cook, Engelmann, Greer, Kyrklund, Johnson, Maloney, McCorkle, Vargas, & Watkins, 1991).

The present research was the first study to directly investigate fluent retelling. Binder and Watkins (1990) described a combination of Precision Teaching with instructional programs such as the "Personalized System of Instruction" and Direct Instruction for the acquisition of and the development of fluent performance. The improving retelling celerations in the present research study are examples of the development of fluent performance. Precision Teaching research on repeated readings and oral reading has produced similar developments in fluency (e.g., Brosovich-McGurr, 1991; Carroll et al., 1991; Lee, 1990; Sweeney et al., 1992). Data from these Precision Teaching studies reveal multiplying celerations of correct words read resulting in vast improvements in the oral reading fluency of students. The current educational crisis in America's schools (Binder and Watkins, 1989) is recognized by parents, educators, and local, state, and national governments. Binder and Watkins suggest that instructional methods to promote fluent performance, such as repeated readings, may effectively reduce the perceived educational crisis.

**Research Question Four**

*Will repeated readings be functionally related to an improvement in oral reading fluency?* Oral reading fluency was an important collateral variable analyzed in the present study. Several studies demonstrate the relationship between fluent reading and instruction with repeated readings (e.g., Brosovich-McGurr, 1991; Carroll et al., 1991; Lee, 1990; Sweeney et al., 1992). Similarly, the present study replicated the finding that fluent reading is functionally related to instruction with repeated readings. For all 8 of the students participating in
the study, the number of correct words read orally improved during the repeated readings conditions. Students showed dramatic improvements in the frequency of words read correctly during the repeated reading conditions when compared to baseline conditions. Although the learning opportunities (i.e., errors) were slightly higher during the oral reading fluency assessments than in the retelling assessments, the overall frequency of words read was much higher than the frequency of key words and phrases retold. In fact, two of the students read over 300 correct words per minute during one of the repeated reading passages. This outcome illustrates the relatively low frequency of learning opportunities when compared to the frequency of words read correctly. The learning opportunities did not appear to adversely impact improvements in oral reading fluency as shown by the continual improvement of words read correctly.

The data from this study and previous research show similar functional relationships among repeated reading instruction and improvements in oral reading fluency (Brosovich-McGurr, 1991; Carroll et al., 1991; Lee, 1990; Weinstein & Cooke, 1992). All students in this study, except Aaron, surpassed suggested instructional aims (180 to 200 words per minute) for oral reading fluency suggested by several Precision Teaching researchers on all passages (Georgeff, 1991; Lee, 1990; Sweeney et al., 1992). Aaron met instructional aim on 2 of the 4 repeated reading passages. The results of the current study augment a growing literature base demonstrating the effectiveness of repeated readings instruction.
The improving frequencies of words read correctly showed the importance of repeated practice for improving students' oral reading fluency. Like the young basketball player who practices her shooting until this skill becomes a natural extension of her movements during game play, readers may also benefit from the practice of reading and the recall of text until these skills are automatic and natural. The emphasis on developing fluent oral reading and retelling in this study are consistent with the recommendations made by the Association for Behavior Analysis (ABA) Task Force on Right to Effective Education (Barrett et al., 1991). This Task Force advocated the use of instructional procedures to develop fluent academic responding (Binder & Watkins, 1990).

**Research Question Five**

Does the experimenter's immediate and continuous observation and recording during the session result in an accurate measure of students' retelling performance? Re-calibrating the recordings of student reading and recall to ensure measurement accuracy was a methodological strength of the present study. Session with more than 3 or 5 point-by-point retelling or oral reading fluency discrepancies respectively were re-calibrated to 100% accuracy. Less than 4% of the total sessions reviewed by the independent observers needed re-calibration. This suggests that the data collected by the experimenter were highly accurate and reliable. Unlike the independent observers, the experimenter did not repeatedly listen to the audiotaped sessions to record students' performance. During the session, the experimenter assessed the students performance as they read orally and retold content from the passage read. It was likely that significant drift in recording could have occurred because
of the immediate and continuous observations and recordings the experimenter. The accuracy of the experimenters observations and remained high when compared to the independent observers accuracy probes. The fact that the point-by-point agreement was so high, and the need to re-calibrate for accuracy was so low, lends credibility to the results. Further, the high accuracy of measurement suggests that both retelling and oral reading fluency may be "user friendly." This is an extremely important point because teachers are more likely to adopt instructional procedures that take little time to prepare, are easy use, and cost very little in terms of teacher resources. Excluding the preparation of key words and descriptive phrase protocols, the procedures for retelling and oral reading fluency used in this study are simple and direct and meet the criteria discussed above.

**Research Question Six**

*Will the students make positive comments, enjoy the reading program, and request instruction with the repeated reading and retelling procedures?*

Results of the student satisfaction assessments indicate that students enjoyed and would request to use repeated readings and retelling procedures in the future. Students made positive comments concerning the instruction during the exit interviews. They rated retelling, oral reading fluency, and the repeated reading very favorably on the student satisfaction survey. Students believed their reading and recall of text improved during the time they were instructed by the experimenter. Students said they enjoyed the repeated readings because they knew they improved each time they re-read a passage. The repeated readings became a game, as one student said: "...seeing if I get farther than the point I stopped at yesterday.....that is why I liked doing the repeated
readings." Students competed against themselves, constantly trying to improve their previous day's score. The repeated readings were both motivating and exciting for the students. All the students expressed sadness at the completion of the study and said that they would be willing to continue or participate in a new study with the experimenter in the future.

The positive comments made related to the use of retelling as a measurement of comprehension were in direct contrast to those made by the students in the Brosovich-McGurr (1991) experiment. These high school students liked the repeated reading instruction to improve oral reading fluency. They did not, however, want to recall information from a passage. In fact, the students were quite adamant about their dislike of the assessments using recall. The dislike of the recall did not occur in the present experiment. Students in the present experiment made very positive comments and gave very favorable evaluations of the assessments using recall. The difference between student satisfaction with the procedures for retelling reported by Brosovich-McGurr and the present study may be due to differences in school grade level, individual differences of the students, or because Brosovich-McGurr assessed recall in a group setting rather than individually. Whatever, students in this experiment enjoyed retelling what was read and believed it was useful, practical, and beneficial to them.

Students attributed improvements in reading and grades to the daily instruction with Mr. Sweeney. Although this claim is likely exaggerated, students perceived that they were doing better academically in other school work. These perceptions of improved reading performance may generate a self-fulfilling prophecy -- success breeds success. Binder (1990a) describes the
need for developing fluent behavior not only to help make students become automatic in those skills but to assist in building confidence. This focus on students' competency and mastery in retelling and oral reading fluency are similar to the goals of those advocating the use of Precision Teaching and Direct Instruction (Binder & Watkins, 1990; Carnine, Granzin, & Becker, 1988; Kinder & Carnine, 1991; Lindsley, 1991). In short, improving the competency of students in one specific academic area, such as reading, may result in high self-esteem, greater confidence in their own abilities, and a positive affective outlook.

Limitations

This study was limited by the following factors: participant characteristics, absences, lack of a literature-base dealing with frequency measures for retelling, lack of retelling instructional aims, questionable content validity of the measurement procedure, curriculum materials used, varying difficulty of curriculum, and the instructional context and setting.

Participant Characteristics

Although all 8 students participating in this study experienced reading difficulties in the regular classroom and were designated academically at-risk, received special education services for specific learning disabilities. Three of the students were African-American and the other five were Caucasian. The elementary school, setting for the experiment, was located in a lower middle class working neighborhood. It is not known to what extent the generality of the effects of the retelling and oral reading fluency results would be across students of different ages and skill levels, of different races, and of different socioeconomic levels.
Absences

While overall student attendance was good during the second half of the study, absences due to flu and snow days during the first three conditions of the study hampered data collection. Students were absent on the average between 5 and 14 days, most occurring during the first baseline and intervention conditions. It is not known to what extent the results would have differed had students been present for all sessions of the study.

Literature Base

The use of recall of text as a measurement of comprehension is a relatively new area of inquiry in reading. This study was only the second experiment to use frequency of retelling as a measurement of comprehension and the first to report improved frequencies of recall. Most other studies with retelling as a dependent variable report percentage measures or inferential statistics. It is difficult and premature to make generality statements (i.e., external validity) concerning the present results. Replications of this research across different students, settings, and curricuiums with different experimenters will help to establish the generality of the reported findings of this experiment.

Instructional Aims

Instructional fluency aims are established for many academic areas, such as oral reading fluency (Haughton, 1972; Koorland, Keel, & Ueberhorst, 1990; Mercer & Mercer, 1989). Unfortunately, instructional fluency aims and standard measurement have not been determined for assessments using recall of text. It is not known whether students' performance in the present research are a representative of instructional fluency aims that could be used with other
students and other instructional settings. It is premature to recommend fluency aims for retelling until more frequency data are collected and analyzed.

Content Validity of the Measurement Procedure

Several research studies (e.g., Adams et al., 1982; Alexander, 1985; Douge 1983; McCormick & Cooper, 1991) have established content validity of the "information unit." The current experiment used an abbreviated version of the Adams et al. (1982) "information unit" as a measure of comprehension. Although the results of this study appear promising, the retelling measurement procedures of key words and descriptive phrases needs further analysis to ensure content validity. It is not known to what extent the key words and descriptive phrases developed by the experimenter to measure retelling is valid. This is an empirical question to be answered in future research.

Curriculum Materials

The reading materials used in this study are those typically used in special education and remedial reading classrooms. These materials are supplemental to the basal readers used in the classrooms of students participating in the present study. It cannot be assumed that similar results would result if the students read from the classroom reading materials. Further research is needed to determine whether the outcomes of this experiment has generality with other instructional materials.

Difficulty of Reading Passages

The passages used in this experiment were selected from the supplemental reading series, Reading for Concepts Series (Liddle, 1976, 1977). These reading passages have some grade level variability. The Fry Readability Formula (Fry, 1968) produced an acceptable range of grade level
difficulty, students found some passages more difficult to read than others. Differences in grade level readability may be a variable that influenced the recall of text.

**Instructional Context and Setting**

Other contributing factors may have been periodic constitutional and affective problems encountered by the students, classroom demands, and special events (e.g., field trip, school assembly, classroom party). Students were taken out of their regular classes and worked individually with the experimenter in a small storage room in the school. All of the students received the majority of their daily instruction in a typical large group, whole class setting. This individualized instruction in a separate area of the school was atypical for most of the students.

**Implications for Classroom Practice**

Repeated reading instruction is effective for developing oral reading fluency (Brosovich-McGurr, 1991; Carroll et al., 1991; Lee, 1990; Samuels, 1979; Sweeney et al., 1992; Weinstein & Cooke, 1992). The present results extend the use of repeated readings as instruction for the recall of text. Repeated readings will increase active student response. Research has shown (e.g., Courson, 1989; Miller, Hall, & Heward, 1992; Narayan, Heward, Gardner, Courson, & Omness, 1990; Sweeney, Gardner, Hunnicutt, & Mustaine, 1992) that increasing active responding by students improves achievement levels in a variety of academic subjects. Further, fluent reading and retelling increase the likelihood that those skills will be maintained and will generalize to other reading passages and curricula.
Repeated reading instruction could be used to develop recall of information from science, language arts, history, geography, and health texts. The use of repeated readings with the regular education curriculum would provide additional practice for the acquisition and maintenance of facts, main points, and important information.

Repeated reading instruction is often reported to motivate academic responding. The improvements in oral reading fluency and retelling because of repeated practice are correlated with positive comments about schooling and overall affect of students during the present experiment. Some students wanted to reread the passage after they completed their oral reading assessment to beat their previous score. Students liked the repeated reading instruction. If students perform better when they enjoy what they are doing, then repeated reading instruction is a logical, effective, and motivational instructional strategy. In addition, teachers can teach appropriate social behaviors by integrating cooperative learning and peer tutoring strategies with repeated readings.

Suggestions for Future Research

This was the only experiment to use key words and descriptive phrases to for an assessment of recall of text. Unlike other studies that used inferential statistics and percentages (Adams et al., 1982, Alexander, 1985; McCormick & Cooper, 1991; Douge, 1983), this experiment used frequency of retells to analyze functional relationships between repeated reading and retelling. One other experiment (i.e., Brosovich-McGurr, 1991) was found that used frequency of retelling to measure comprehension. At present, there are so few frequency measures used to assess retelling that it is difficult to make any conclusive statements about the generality of the results of this experiment. Experimental
replications using the dependent variable of this study are necessary to establish the generality of the findings of this current research.

The "information units," described by Adams et al. (1982), have high content validity. As discussed earlier, the experimenters found counting "information units" cumbersome. In addition, it was difficult at times, determining the beginning and ending of each unit. These measurement problems in the context of frequency measurement evoked the development of the abbreviated key words and descriptive phrases used in this study. A detailed analysis of the content validity of counting key words and descriptive phrases as an assessment of comprehension is needed.

This experiment examined the effects of recall of text with elementary students academically at-risk and one student with specific learning disabilities. Most research using recall as a dependent variable has used students: (a) elementary students who are academically at-risk (Adams et al. 1982; August, Flavell, & Clift, 1984; Gambrelli, Koskinen, & Kapinus, 1991; Gambrell, Pfeiffer, & Wilson, 1985), (b) elementary students with learning disabilities (Alexander, 1985; Douge, 1983; Rose, Cundick, & Higbee, 1983), (c) with high school students with learning disabilities (Brosovich-McGurr, 1991; McCormick & Cooper, 1991). No research using recall of text has been conducted with middle-school, secondary regular education, or other special needs students. Future research could evaluate the effects of the retelling assessments across different populations and the maintenance and retention of these skills over time. Finally, future research is needed to help develop specific classroom strategies that incorporate: (a) students self-counting, self-charting, and self-
monitoring of retells and (b) the use of cooperative grouping and peer tutoring with repeated practice and the recall of information.

Summary

The purpose of this experiment was to analyze the effects of repeated reading instruction on the recall of text of elementary students who are academically at-risk. A combined multiple-baseline across students experimental design with an embedded reversal experimental design was used to define functional relationships among dependent and independent variables. Oral reading fluency was also assessed during this experiment.

Students received no direct instruction on retelling or corrective feedback after oral reading fluency and the retelling assessments. Omitting corrective feedback and any direct instruction on the retelling and oral reading fluency assessments was done to ensure that these variables did not confound the experimental. Students completed three activities each session. They: (a) read a selected passage with the experimenter to ensure that decoding problems would not interfere with the oral reading and retelling assessments; (b) reread the passage during a one-minute oral reading fluency assessment; and (c) retold everything they could remember about the passage. Students read a new passage during each baseline session. During intervention and transfer conditions, students read the same passage each session during repeated readings and transfer conditions. Repeated readings instruction was used on four separate unread passages. Each unread passage corresponded to an intervention or transfer condition. Generality was assessed by examining the transfer effects on two unread passages.
Retelling and oral reading fluency were assessed during each session. The dependent variable was the number of correct and incorrect key words and descriptive phrases retold per minute. A collateral dependent variable was the number of correct and incorrect words read per minute. Protocols listing the key words and descriptive phrases from each of the passages were developed. The reading passages of 170 to 210 words were selected from the Reading for Concepts Series (Liddle, 1976, 1977). The reading passages ranged from 3.0 to 6.5 in grade level reading equivalent (Fry, 1968).

Functional relationships among the number of correct key words and descriptive phrases retold per minute and repeated reading instruction were shown for all 8 students. The medians, celerations, and performance changes indicated that recall of text improved repeated reading instruction but not during baseline conditions. The learning opportunities (i.e., errors) remained low and stable throughout the experiment. The improvements made in the recall of text transferred to two unread passages during the final condition of the study. Also, functional relationship among the number of correct and incorrect words read orally and repeated reading instruction occurred for all students. The medians, celerations, and performance changes indicated that oral reading fluency improved during repeated reading instruction but not during when compared to baseline conditions. The improvements made in oral reading fluency also transferred to two unread reading passages during the final condition of the study.
APPENDIX A

Description of Chapter 1 and Chapter 2:
Reading and Mathematics Program
Columbus Public Schools
Chapter 1 Reading and Mathematics Program

GUIDELINES FOR PROGRAM EVALUATION ACTIVITIES
FY 92

General Policies and Procedures

The Reading and Mathematics Program are funded by Chapter 1. As a result of this funding, each program teacher has specific evaluation responsibilities which are clad directly to the program's Desired Outcomes. Your Program Evaluation responsibilities include the following major tasks:

- selecting pupils for each grade using program guidelines;
- keeping accurate enrollment and attendance records;
- keeping accurate parent involvement records; and
- administering and/or assisting with norm-referenced testing at appropriate times.

The Department of Program Evaluation will work with you throughout the year in this data collection process.

Desired Outcomes

The Desired Outcomes (Objectives) for this year's Chapter 1 Reading and Mathematics Program are as follows:

**Desired Outcome 1:** At least 50 percent of the pupils (grades 2-8) in the evaluation sample will gain at least 3.0 normal curve equivalent (NCE) points for the instructional period in reading comprehension or mathematics concepts and applications. Gain will be measured by a nationally standardized achievement test.

**Desired Outcome 2:** Annually at least 75 percent of the pupils in the treatment group will demonstrate satisfactory progress in the regular classroom as demonstrated by promotion to the next grade level at the elementary level or by passing the course in which reading or mathematics instruction occurs at the middle school level. At the middle school level only pupils who are enrolled in a reading or mathematics course will be included.

**Desired Outcome 3:** Parents of at least 75 percent of Chapter 1 pupils in the treatment group will participate by visiting in the classroom, volunteering in the classroom, assisting with homework, reading to or being read to by their children, or attending parent-teacher conferences during the 1991-92 school year. Records of parent contacts and activities will be maintained by Chapter 1 teachers.
Student Selection

Pupil selection procedures are established by the Federal and State Programs to comply with standards set by the State of Ohio. You will select students with the greatest need, i.e., those with the lowest Service Index Number (grades 2-8).

Procedures are outlined for selecting the pupils in grades 2-8.

Grades 2-8

What is Provided:
1. Pupil Selection Lists for each Building:
   • Sorted by Reading Service Index Number;
   • Sorted by Mathematics Service Index Number;
   • Alphabetic Listing for all pupils in the Building;
2. CTBS Selection Tests; and
3. Service Index Conversion Matrices for Fall Selection Testing.

What You Need to Do:

1. Use your selection Lists to select pupils in grades 2-8.

2. Follow the procedures outlined by Federal and State Programs to select pupils for whom you have a Service Index Number. Remember that pupils with a Service Index Number greater than or equal to 43 are not eligible for Chapter 1 services.

3. If a pupil has been recommended for your program but is not listed on your Pupil Selection List, use another Pupil Selection List (alphabetical within your school). Check the Alphabetic List to see if the pupil is listed and a Service Index Number reported. If the pupil is not listed on the alphabetical pupil Selection List, call your program coordinator at Shepard (phone 5290) or the Department of Program Evaluation (5167), who have a selection list for the entire district. If the pupil is located, check to see if he/she has a Service Index Number of 42.9 or less. If so, add the pupil to your selection list in the proper order and follow the steps above.
4. FOR PUPILS WHO DO NOT HAVE A READING OR MATHEMATICS SERVICE INDEX NUMBER AND HAVE BEEN RECOMMENDED FOR SERVICE: Administer a Selection Test (CTBS, Levels D-H, Form V) to any pupil who has been recommended for Chapter 1 service and does not have a Reading or Mathematics Service Index Number. See Table 1 (page 13) for the proper form and Level to administer. Please note that you will be administering the Reading Comprehension and Reading Vocabulary or Mathematical Computation and Mathematical Concepts and Application tests. After obtaining the raw scores for a pupil on the selection tests, use the appropriate Service Index Conversion Matrix (see pages 23-40) to convert the raw scores to a Service Index Number. BE SURE TO USE THE CORRECT CONVERSION MATRIX. If the Service Index Number is less than 43, add the pupil's name to your Selection List in rank order and follow the selection procedures.

5. To form your teaching groups, all pupils with Service Index Numbers 42.9 or less should be placed on one list, ranked from lowest to highest. Serve pupils with the lowest Service Index Numbers first.

6. The pupils not immediately served will form your waiting list for future service. Improvement in reading and mathematics will be measured by a comparison of Spring 1991 and Spring 1992 test scores on a standardized test.

If new pupils enroll at your building during the school year, and if the classroom teacher thinks they may qualify for program services:

1). Check all sources (your listing plus district listing at Shepard or Program Evaluation) to see if they have a Service Index Number.

2). If they do not have a Service Index Number, you must administer the selection test and follow the above steps.
APPENDIX B

Parental Consent Form
Parent/Guardian Consent Form for Participation in a Research Project on the use of repeated readings to improve reading comprehension.

I agree to allow my child to participate in a research study investigating the effectiveness of repeated readings to increase reading comprehension. This research will be conducted by Mr. William J. Sweeney, under the direction of Dr. John O. Cooper, Professor of Special Education, The Ohio State University's College of Education. The instruction will begin on November 4, 1991 and conclude in March, 1992. Mr. Fuchala, the school principal, and the teaching staff at Easthaven Elementary have been extremely helpful, enthusiastic, and supportive in this research endeavor.

I understand that my child's identity will be kept confidential during the course of the study and during any subsequent publications, document, recording, videotaping, computer storage, presentations, and other forms of dissemination of research dealing with this procedure. Additionally, I understand that I may withdraw my consent for my child's participation at any time. If there are any questions, comments, or concerns I will contact William Sweeney at (614) 292-8787 or at Easthaven Elementary School.

Name of Student

______________________________
Signature of Parent or Guardian Date

______________________________ Date
Mr. Joseph Fuchala, Principal

______________________________ Date
William J. Sweeney, Investigator
APPENDIX C

Permission to Duplicate Reading Passages:
Reading Material Copyrighted by Others.
To: Mr. Alexander Burke, President
Phoenix Learning Resources Center
12 West 31st Street
9th Floor
New York, New York 10001
Fax #: (212) 779-7493

Date: March 9, 1992

From: William J. Sweeney

RE: Request permission for duplicating reading passages from the Reading for Concepts series, Levels C and D.

Dear Mr. Burke:

I am writing for permission to duplicate 34 reading passages from Liddle's (1977) Reading for Concepts series, Levels C and D. These passages will be used for my dissertation research. The dissertation is an experimental reading strategy with 4 fourth-graders and 4 fifth-graders. The dependent variable will be retelling as a measure of reading comprehension. I will use the duplicated passages with only these eight students during the research. Below are the specific sources requested for permission to duplicate:

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<td>24</td>
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<td>C</td>
<td>The Ugly Shore</td>
<td>34</td>
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<tr>
<td>C</td>
<td>Land Of The Past</td>
<td>40</td>
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<tr>
<td>C</td>
<td>A Brave Fighter</td>
<td>44</td>
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<tr>
<td>C</td>
<td>The City That Grew In A Lake</td>
<td>48</td>
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<td>C</td>
<td>The King That Would Not Listen</td>
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<td>C</td>
<td>The Day King John Could Not Forget</td>
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</tr>
<tr>
<td>D</td>
<td>A Spider Without A Web</td>
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This request includes the world rights to the first and all future editions thereof, including revised editions, scholarly journal articles, and other forms of research dissemination. Proper acknowledgement of title, author, and publisher will be given. Please use the release provided below, a copy is enclosed for your files. If you have any comments, questions, or concerns please feel free to write me at the address listed above or to call me at (614) 292-8787. Thank you for your time and cooperation in this matter. I would greatly appreciate your approval of this request.

Sincerely,

William J. Sweeney, Ph.D. Candidate
Applied Behavior Analysis/Special Education Program
The Ohio State University

Permission Granted for the above request

Date

cc: Dr. John O. Cooper
APPENDIX D

Sample Reading Passages:
Today, all fifty states in America have many laws about education. One of these laws says all children must go to school. Each state collects tax money from people who own property. Taxes are used to build schools, buy books, and pay teachers. In that way, everyone can go to school.

In Colonial days, it was different. Usually, people had to pay to send children to school. Not everyone could afford to send their children, and many young people never went to school. In school, most children were taught only to read and write. Children from rich families had a better education.

During the early 1800s, people began to think it was important for all children to have an education. In 1852, Massachusetts passed a law which said that all children must go to school. Then other states passed education laws. At first, children only had to go to school four or five years. There were no high schools.

Now children must remain in school until they are sixteen. In some states, they must stay in school until they are eighteen. Schools are paid for by tax money. All children have a chance to learn.
Key Comprehension Words Related to:

Intervention Story #1

Education for All, pp. 120

Nouns:
- Education
- Children (Students, kids)
- 50 States (Other States)
- America (United States)
- Laws
- Young people (Adolescents)
- States (ref: ind. states)
- Money (Monies)
- Schools (School)
- Teachers
- Read
- Write
- Families
- People (ref: people in general)
- 1852
- Massachusetts
- 16 (ref: sixteen years of age)
- 18 (ref: eighteen yrs. of age)
- Books
- Property

Verbs:
- Says (said, states, specifies, requires)
- Must Go (Go, Going, went)
- Collects
- Tax (Taxes)
- Used
- Buy
- Pay (Paid)
- Send
- Taught (Teach, teaching)
- Think
- Passed
- Remain (Stay)

Descriptive Words and Phrases:

Today
Colonial days
It was different (ref: Colonial Days)
Not everyone could afford
Never went (ref: not going to school)
Rich (ref: families)
Early 1800's
It was important (ref: education)
Four or five years
No high schools
Chance to learn

Correct # Retold ________ / Total # Possible 44
Incorrect # Retold ________ / Total # Possible 44
APPENDIX E

Accuracy Probe Summary Sheets:

(a) Retelling Summary Sheet

(b) Oral Reading Summary Sheet
## Accuracy of Scoring for Retelling Comprehension

**Dissertation:**
Retelling Comprehension Study
William J. Sweney

**Accuracy Measures Conducted By:**
James Dunn

### Students Name: ____________________  Grade: ____________________

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<th>Date of Accuracy Probe</th>
<th>Condition &amp; Session #</th>
<th># Correct / # Total Items or Descriptive Phrases Retold (WIS)</th>
<th># Correct / # Total Items or Descriptive Phrases Retold (ID)</th>
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**Summary Accuracy Data**

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<th>Total # of Corresponding Discrepancies of Items or Descriptive Phrases Retold (One to One Corr. between WJS &amp; JD)</th>
<th>Accuracy = Discrep. X 100 = Accuracy %</th>
<th>Total Number and Percentage of Sessions were the Error, (WJS) was +/− 3 in terms of corresponding # of items Retold recorded on the Accuracy Probe (JD), (to calculate add up the # of Yes reps and divide by total # of probes)</th>
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### Accuracy of Scoring for Oral Reading Fluency

**Discussion:**

Retelling Comprehension Study  
William J. Sweeney

**Accuracy Measures Conducted by:**  
James Dunn

---

**Students Name:**  
**Grade:**

| Accuracy Probe Number | Date of Accuracy Probe | Session # | # Correct / # Total Words Read (WJS) | # Correct / # Total Words Read (JD) | # of Corresponding Accurate Words Read (One to One Corr. between WJS & JD) | Percentage of Overall accuracy:  
Acc. Words Read  
Acc. + Discrep.  
X 100  
= Accuracy % | Was the Exper. (WJS) +/− 5 of the Corresponding # of Words Read, Accuracy on the Probe (JD)? | If No was the data realigned? |
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**Summary Accuracy Data**

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<th>Total Number of Accuracy Probes Conducted</th>
<th>Total # Correct / # Total Words Rd (WJS) - Entire Study</th>
<th>Total # Correct / # Total Words Rd (JD) - Entire Study</th>
<th>Total # of Corresponding Accurate Words Rd (One to One Corr. between WJS &amp; JD)</th>
<th>Total # of Corresponding Discrepancies of Words Rd (One to One Corr. between WJS &amp; JD)</th>
<th>Total Percentage of Overall accuracy: Acc. Words Rd - Acc. + Discrep. X 100 = Accuracy %</th>
<th>Total Number and Percentage of Sessions that were recalibrated (to calculate add up the # of Yes resp's and divide by total # of probes)</th>
<th>Total Number and Percentage of Sessions were the Expers. (WJS) was +/- 5 in terms of corresponding # of Words Rd recorded on the Accuracy Probe (JD) (to calculate add up the # of Yes resp's and divide by total # of probes)</th>
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APPENDIX F

Procedural Integrity Checklist:
Procedural Integrity Probe Checklist

Students Name: ___________________ Session #: __________________
Condition: ___________________ Date of Session: ____________

Date of Procedural Integrity Probe: _______________________
Integrity Probe Number for this student: _______________________
Person conducting Procedural Integrity Probe: ________________

Put an "X" in the underlined space below if the statement reads true and the procedures have been followed. Put an "O" in underlined space below if the statement is false and the procedures have not been followed. Mark an "X" only when statement was completed correctly and in the proper sequence (i.e., only applicable for the sequence of instruction). If a statement was not completed or out of sequence mark with an "O".

I. Sequence of Instruction.
   • Proper instructional sequence was followed
     _____ Student reading for accuracy - Experimenter correcting
        reading errors.
     _____ One-minute reading fluency time trial.
     _____ One-minute retelling time trial.

   • Instructions given prior to each part of the instruction.
     _____ Student reading for accuracy - Experimenter correcting
        reading errors - "We are going to read together....."
     _____ One-minute reading fluency time trial - "I want you to read
        as fast as you can until you hear the buzzer..."
One-minute retelling time trial - "I want you to tell me everything you can remember about the passage as fast as you can until you hear the buzzer."

II. Error Correction (i.e., only during the reading for accuracy section)
   - Experimenter pointing out students reading errors.
   - Student rereads incorrect word or phrase correctly.
   - Student rereads the word or phrase in the context of the sentence correctly.

III. Praise or Feedback
   - No specific praise (i.e., identifying skill or specific reading performance) during the one-minute time trials.
   - No specific feedback (i.e., identifying skill or specific reading performance) during the one-minute time trials.
   - General praise statements (i.e., excellent job today) during the one-minute time trials.
   - General feedback statements (i.e., You are really working hard; Effort is what really counts, etc.) during the one-minute time trials.

Total number of items marked with an "X" divided by total number of spaces (13 possible) = percentage of steps correctly followed.

Record the number of marked items and the percentage of steps correctly followed on the Procedural Integrity Summary Sheet.
APPENDIX G

Procedural Integrity Summary Sheet:

195
### Procedural Integrity Probe Summary Sheet

**Students Name:** ____________________  **Grade:** ____________________

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<th>Probe Number</th>
<th>Date Probe was Conducted</th>
<th>Condition and Session Number</th>
<th>Total Num. Items Marked Correct</th>
<th>Total Num. Items Poss. During Each Session</th>
<th>Percentage Items Done Correctly During Ses.</th>
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APPENDIX H

Student Satisfaction Interview Questions:
Student Interview Questions

I am going to ask you a few questions about the work you did with Mr. Sweeney over the past few months. I want to know your feelings and thoughts about participating in his study. Please be honest and thorough in your answers to the following questions.

1). What do you think was the purpose of the work you did with Mr. Sweeney?
2). What did you like best about the way reading was taught during your work with Mr Sweeney?
3). Do you think this reading program helped you to become a better reader? Why?
4). Did you like reading aloud? Why or why not?
5). Did you like it when you were asked to read as fast as you could?
6). Do you think this helped you to become a better reader? Why or why not?
7). Do you think that reading for speed is a good way to practice reading? Explain.
8). Did you like it when you had to retell everything you could remember from the story? Explain.
9). Why were you asked to retell everything you could remember from the story?
10). What did you like more, reading the individual passages each day or reading the repeated readings each day?
11). Explain why the repeated readings were used?
12). Do you think that repeated readings are a good way to practice reading?
13). What did you think of the stories that you read during your sessions with Mr. Sweeney?

14). If you were to change anything about the way Mr. Sweeney taught reading what would it be?

15). What suggestions could you give to improve these reading procedures for future students?

16). Would you like to participate in a similar reading program in the future? Why or why not?

17). Is there anything else that you would like to say?
APPENDIX I

Student Satisfaction Written Survey:
Student Satisfaction Written Survey

I am going to read a few statements about the reading project you participated in over the past few months. Please listen carefully and circle the choice that most accurately tells how you feel.

1). Participating in the reading program was fun.
   YES          SOMETIMES          NO
2). Using repeated readings (i.e., rereading the same story) is a good way to practice reading.
   YES          SOMETIMES          NO
3). I disliked reading aloud.
   YES          SOMETIMES          NO
4). I liked when I had to read a story as fast as I could.
   YES          SOMETIMES          NO
5). I was bored during the repeated readings (i.e., rereading the same passage over and over again in each session).
   YES          SOMETIMES          NO
6). Retelling everything you can remember is a good way to show what you understood from a reading passage.
   YES          SOMETIMES          NO
7). Retelling everything you can remember was frustrating.
   YES          SOMETIMES          NO
8). The stories used were interesting.
   YES          SOMETIMES          NO
9). I think my reading has improved since the beginning of the reading program.
   YES     SOMETIMES      NO

10). I do not think this reading program was a good way to teach reading.
    YES     SOMETIMES      NO

11). I was excited when asked to retell everything I could remember about a story.
    YES     SOMETIMES      NO

12). I could tell that my reading was improving when we used the repeated readings.
    YES     SOMETIMES      NO

13). I would participate in this reading program again.
    YES     SOMETIMES      NO

14). I do not think I read any better since the beginning of this reading program.
    YES     SOMETIMES      NO

15). I was able to retell more information about a story because of rereading it during several sessions (i.e., repeated readings) rather than only reading it once.
    YES     SOMETIMES      NO
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Sweeney, W.J., Gardner, R., Hunnicutt, K.L., & Mustaine, J. (1992). Increasing active student responding through the use of write-on and pre-printed response cards in an urban elementary third-grade social studies class. Unpublished manuscript, The Ohio State University, Department of Educational Services and Research, Columbus, OH.


