

A COMPARATIVE STUDY OF TWO TREATMENT APPROACHES  
FOR IMPROVING MIDDLE SCHOOL STUDENTS'  
READING COMPREHENSION

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## ABSTRACT

The purpose of this study was to examine the efficacy of having material read to and discussed with learning disabled students (i.e., a compensatory approach termed Accommodated Reading in this study) compared to teaching the literate language of text structures to students (i.e., a language intervention approach termed Communicative Reading Strategies). Participants were two 5<sup>th</sup> grade students and three 6<sup>th</sup> grade students, classified as learning disabled according to criteria of the State of Louisiana. Students took part in the study 3 times per week, 40 minutes per day for 5 ½ weeks during their regular speech-language therapy time. After each reading in both conditions, participants answered literal and nonliteral questions based on the text read. Pretest and posttest comprehension measures were taken utilizing standardized tests.

Results of a t-test indicated that CRS and AR phases were not statistically different from baseline for four subjects; however, one subject did reach statistical significance with scores favoring Communicative Reading Strategies.

## LITERATURE REVIEW

A common compensatory strategy for middle-school students with learning disabilities is to have material read aloud to them for tests and classroom projects. It is assumed that their primary barrier to success is the inability to decode words and achieve fluency of reading. When this barrier is removed by having text read to them, the assumption is these students will then be able to learn the information and acquire comprehension skills in a manner similar to their peers. An alternative view is that language deficits underlie the reading problems encountered by learning disabled students. The lack of engagement in reading and interpreting text further limits growth in vocabulary, syntax, inferential comprehension, interpretation of metaphoric language, and complex discourse structures found in literate language. Therefore, when text is read to these students, they are still limited in their ability to comprehend the information, even when engaged in a discussion of the story or textbook.

The purpose of this study is to examine the efficacy of having material read to and discussed with learning disabled students (i.e., a compensatory approach termed Accommodated Reading in this study) compared to teaching the literate language of text structures to students (i.e., a language intervention approach termed Communicative Reading Strategies). The relative effects of each condition will be compared for literal and inferential comprehension of narrative text.

### Compensation versus Intervention

Providing appropriate reading intervention for children with learning disabilities is important to success in school. Determining which type of intervention is best for children with reading comprehension difficulties can be very problematic. Intervention should be child specific. However, due to time constraints and caseload numbers in the public school system,

speech-language pathologists must see children in a group setting rather than to provide unique services to each individual child. Subsequently, intervention activities provided to the group must be designed to be sufficiently flexible and dynamic to meet the needs of each individual.

### Teaching Reading Comprehension

Over 20 years ago Durkin (1978-79) revealed that many reading teachers spent less than one percent of their time teaching comprehension. Despite many subsequent comprehension studies, research has shown that even today, teaching of comprehension skills is lacking (Pressley, Wharton-McDonald, Hampson, & Echevarria, 1998).

Asselin (2002) reviewed the extant research on reading comprehension. Her review found that effective comprehension strategies included the following: activating background knowledge, asking questions during reading, constructing images during reading, summarizing, and analyzing stories into their grammatical or structural components, and nonfiction into relevant structures. Fielding and Pearson's (1994) review of research on reading comprehension revealed that successful reading comprehension programs employed teacher directed instruction in comprehension strategies. Those techniques found to be successful included activating prior knowledge to create inferences (Hansen & Pearson, 1983), finding the main idea (Baumann, 1984), recognizing parts of text needed to answer questions (Raphael and Pearson, 1985), and using story structure to help understand text (Fitzgerald & Spiegel, 1983; Armbruster, et al., 1987).

A strong advocate of comprehension-based reading instruction is Goodman (1982). Goodman proposed that from the earliest stages of reading development instruction should center on the advancement of comprehension. He suggested that to comprehend what is read, appropriate reading instruction should be comprised of teacher facilitated explorations of the

text. To teach reading, the teacher must understand the reading process, and know what skillful readers do and how they became skillful readers. Reading is thus an interactive process in which the teaching of skills is embedded within meaningful reading.

### Compensatory versus Facilitative Intervention

Accommodated Reading (AR) is the compensatory practice of have material read to and discussed with learning disabled students. When presented with text read aloud by a teacher, children are unimpeded by their own word-by-word decoding, thus comprehension during this time is expected to be accurate. However, only a small portion of classroom assignments can be read to students with LLD. Further, this practice does not lead to increasing independence since no focus is placed on increasing students' reading skills. Compensating for these children's disabilities through modeled reading as they follow along in the text is seemingly a time efficient way to present curriculum-based information and may be seen as a "quick fix." Test scores improve as students correctly answer more text related questions, thus demonstrating short-term efficacy. But long-term, the student is not gaining functional literacy skills.

In contrast, intervention designed to improve reading word recognition, fluency, and independent comprehension is focused on acquiring long-term functional literacy skills. Engaging students in teacher facilitated or Communicative Reading Strategies (CRS) has the goal of enabling students to increase awareness and knowledge of difficult components of the language system. These interactions are designed to increase students' familiarity with syntactic complexity underlying written text, the explicit and implicit meanings communicated through words and the relationships between them, and the relationships between the phonological and orthographic codes.

However, intervention is a time consuming process. Only a limited number of sentences or elements of the text can be addressed during an intervention session. Stopping to examine and teach the language of the text means that only a limited amount of information can be addressed within an intervention session. During AR, a teacher can present more text but the child is not engaged in discovering where specifically in the language this information is communicated. In contrast, during CRS intervention, text presented is considerably less. Yet, we must ethically weigh our options. What will these children benefit more from in the long run?

### Language and Learning Disabilities

The term ‘learning disabled’ is used in the educational setting to classify or label those children who are exhibiting difficulties in reading, writing, and/or mathematics. Language deficits are commonly observed in these children, thus they are also labeled as language learning disabled (LLD). The National Joint Council on Learning Disabilities (NJCLD), an organization comprised of members who work with and study LLD, provide the following definition:

“Learning disabilities is a generic term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual and presumed to be due to central nervous system dysfunction. Even though a learning disability may occur concomitantly with other handicapping conditions (e.g., sensory impairment, mental retardation, social and emotional disturbance) or environmental influences (e.g., cultural differences, insufficient/inappropriate instruction, psychogenic factors), it is not the direct result of those conditions or influences.” (as cited in Fahey, 2000, NJCLD, 1991, p. 19).

Language is a primary cognitive function that allows for communication or exchange of world and cultural knowledge. Children with LLD have been shown to exhibit language problems in all areas of language, including phonology, syntax, morphology, semantics, pragmatics, discourse, and metalinguistics. These students are described as having verbal information processing deficits, poor semantic knowledge, an inability to encode information without contextual support, insufficient ability to organize verbal information, a decreased

capacity to retrieve stored knowledge, and deficits in phonological awareness (Gerber, 1993). Gibbs and Cooper (1989) found that 91% of the elementary-school children identified with learning disabilities in a school district demonstrated delayed language ability, and 23% were also identified as having delayed phonological development. Of these children, only 6% were receiving services from a speech-language pathologist, all of them for speech-sound production deficits.

Phonological Deficits. In addition to the speech-sound deficits of children with LLD, there are numerous studies supporting the notion that the majority of children with reading difficulties have problems processing phonological information. These children are said to have a deficit in phonological awareness. Blachman (1994) defined phonological awareness as “an awareness of, and the ability to manipulate, the phonological segments represented in alphabetic orthography” (as cited in Kuder, 1997). For instance, the child who can categorize words based on initial sounds or segment a word into its component phonemes is said to be phonologically aware. Fox and Routh’s (1980) study with children who had average to severe reading disabilities found that those with severe disabilities were unable to segment syllables into phonemes, whereas the other children could complete the task. Liberman and Mann (1981) supported these findings in their studies with kindergarteners, showing that syllable segmentation was a significant predictor of reading ability in the first grade (as cited in Gerber, 1993) .

However, phonological deficits are not the only language-based deficits in LLD. By 3<sup>rd</sup> grade children who showed deficits in phonological awareness appear to have resolved these delays, yet the reading problems remain (Stanovich, 1986, as cited in Gough, Ehri, & Treiman, 1992). Many poor readers have difficulty following the content and structure of reading passages (Baker & Brown, 1984). Syntactic awareness has been shown to be equally as

important to reading development as phonological awareness (Tunmer & Nesdale, 1986, as cited in Gough, Ehri, & Treiman, 1992). Even when comprehension strategies are taught, comprehension measured by standardized tests does not improve (Paris & Oka, 1989, as cited in Gough, Ehri, & Treiman, 1992). One possible explanation is the *Matthew effect* (Juel, 1988, as cited in Gough, Ehri, & Treiman, 1992). Poor readers enter school with less proficiency in language (Loban, 1976, as cited in Flood, Jensen, Lapp, & Squire). These children have greater difficulty learning to read. Word recognition deficits result in the child reading less. When they do read, they begin to confront materials that are too difficult, which further discourages reading. Less reading experience results in less exposure to new vocabulary and more syntactically complex sentences found in literate language. Even when the readers do attempt to read text, they are even further behind in the needed language skills and are therefore less successful. The less information read, the more impoverished knowledge base held by the reader, and thus an increasingly poorer knowledge base for comprehension emerges (Juel, 1988, as cited in Gough, Ehri, & Treiman, 1992).

Morphological Deficits. Not only do children with LLD demonstrate deficits in phonological aspects of reading, they also struggle with word parts, or morphemes. Goodman (1982) compared morphemes to a molecule, as a morpheme is “the smallest segment which has all the basic characteristics of the larger system” (p. 166). He went on to say that morphemes are distinguished from phonemes because they are able to convey information alone, whereas a phoneme would need to combine with other phonemes to relate a message. It is not surprising that if children with LLD experience difficulty with phonemes, they would also struggle with morphemes. Moran and Byrne (1977) found that children with LLD compared to children without LLD demonstrated deficits in the use of morphological inflections, such as those used

for verb tense, plurality, and possession (as cited in Gerber, 1993). With respect to written language, Moran (1981) found that adolescent children with LLD produced fewer morphemes per T-unit, when compared to children without LLD (as cited in Gerber, 1993).

Syntactic Deficits. As sentence length increases, problems with syntax also persist in children with LLD. During the elementary and middle school years, children are asked to comprehend increasingly complex sentences, sentences with prepositional phrases (e.g., The flash light was bright *in the dark of the night.*), participle phrases (e.g., He gave her *sweet-smelling* flowers.), gerunds (She likes *coloring* at the picnics.), infinitives (e.g., My sister hates *to scream at the kids.*), and sentences with embedded clauses (e.g., The boy *that* was chased by the bully was crying.). Studies have shown that the more complex a sentence becomes, the more difficulty children with LLD will have comprehending it (Vogel, 1974; Wiig, Lapointe, & Semel, 1977, as cited in Kuder, 1997). Roth and Spekman (1989) indicated that children with LLD appear to go through the same periods of syntactic development as children without LLD, however they progress at a slower rate (as cited in Kuder, 1997).

Syntactic complexity plays an important role in the readability level of written text (Fry, 1968). As a passage becomes more difficult, the number of dependent clauses in a sentence increases. Loban showed (1976) that the gap between syntactic competence in good versus poor readers increased with grade level, indicating that as the syntactic processing demands of a text increased, poor readers had increasingly less syntactic proficiency to interpret the text (as cited in Flood, et al., 1991). Others have shown that children with LLD use shorter, less complex sentences and make more grammatical errors (Vogel, 1977; Wiig & Semel, 1984), as well as showing delayed acquisition (Roth & Spekman, 1989). The second basic measure of readability is vocabulary difficulty, as measured by syllables-per-word (Fry, 1968).

Semantic Deficits. Semantics involves words, their meanings, and the relationship between words. Semantics encompasses vocabulary, figurative language, meaning communicated within and across the boundaries of sentences, and slang. Adolescents must increasingly rely on abstract linguistic information to interpret experience, thus semantic knowledge must be considerable. Deficits in semantic knowledge can critically affect comprehension (Fahey & Reid, 2000). Children with LLD have been found to have poor semantic abilities, including expressive word knowledge exhibited as a limited vocabulary, restricted word meanings in known words, difficulty with multiple word meanings and nonliteral meanings, excessive use of nonspecific terms, such as *thing* and *stuff*, as well as indefinite reference (e.g., *that* and *there*), concreteness in symbolization and conceptualization, and impoverished schematic knowledge (Johnson & Myklebust, 1967, as cited in Brady & Shankweiler, 1991; Nippold & Fey, 1983, as cited in Gerber, 1993; Seidenberg & Bernstein, 1986, as cited in Gerber, 1993; Snider, 1989, as cited in Gerber, 1993 Wiig & Semel, 1975, 1984).

Children with LLD have restricted knowledge of receptive vocabulary as well. They recognize fewer vocabulary words than peers, and the differences increase with grade level since a large proportion of vocabulary is acquired from written language. When reading or listening, they often attach the most concrete meanings of words, even when this interpretation makes no sense in the context. Understanding figurative language poses an increasing barrier to reading and writing with increases in grade level (Nippold & Fey, 1983).

Metalinguistic Monitoring. Lastly, Children with LLD have been shown to be weak in their metalinguistics abilities. Difficulties in evaluating and manipulating language hinder the learning experience. For example, a child who can rhyme is said to be demonstrating

metalinguistic skills. Phonological awareness is incorporated into metalinguistics, however, comprehension monitoring, a difficult skill for children with LLD to attain, is also important in becoming “meta” about one’s language. Borkowski, Johnson, and Reid (1987) noted that these children are unable to independently develop facilitative strategies (i.e., internal strategies such as rehearsal) that aid in memory and learning and are unable to generalize practice strategies to new tasks (as cited in Gerber, 1993). Gerber’s (1993) synthesis of work on metacomprehension revealed that LLD children demonstrate difficulties in “planning, monitoring, and checking comprehension” (p. 263). Thus, failure to become metalinguistic regarding comprehension can further negatively impact an LLD child’s educational experience.

Reading Fluency. An essential skill related to oral reading and comprehension is reading fluency. The majority of children with LLD exhibit poor reading fluency. Perfetti (1985) suggested that a reader’s slow decoding taxes their working memory, thus interfering with their comprehension of text (as cited in Gough, Ehri, & Treiman, 1992). The decrease in reading fluency can be noted when the child reads aloud. The listener observes frequent miscues, poor intonation and phrasing, and monotone reading, indications that the reader is failing to make sense of the text.

#### Individualized Education Plan Accommodations

Individualized Education Plan (IEP) facilitators have an option of choosing accommodations for children who qualify for speech-language and/or special education services. These accommodations are meant to aid the child in the learning experience. However, certain accommodations for specific populations may hinder the learning experience in the long term. For instance, one accommodation often chosen by the facilitator for a language learning disabled (LLD) student is to have class materials and tests read aloud to them. Reading aloud to these

students removes one barrier to learning caused by the inability to fluently decode text during reading. While this compensatory strategy addresses an immediate need (i.e., the present assignment), it does not lessen the long-term effects of the reading disability. Middle school children and beyond are expected to read expository and narrative text independently and to comprehend what is read. Only a small fraction of assignments can be read to students, rendering their exposure to academic information and literate language minimal compared to their peers.

### Oral to Literate Language Continuum

By the time children are ready to enter grade school, most have mastered the art of talking. They have learned the phonology, syntax, and semantics of a language that is essential to communicate with others. However, upon entering grade school some children exhibit difficulties with the “abstraction and decontextualization” of the school’s language demands. These children may have acquired the basics of the language, yet do not use their “language base to learn or to develop higher cognitive manipulations of information (i.e., to reflect, reason, and plan)” (Westby, 1985, p. 182). Westby described this transition from learning to talk to talking to learn as development occurring along an oral to literate continuum. The oral and literate language poles differ in function, topic, and structure. At the oral pole language functions to control social interactions, while on the literate pole language functions to control thinking and planning, as well as to reflect on or seek additional information.” The topic for the oral end of the continuum is usually familiar; while literate school interactions involve unfamiliar and hypothetical topics. In addition, the structure of language is less complex at the oral end of the continuum. Oral language is often communicated in phrases filled with nonspecific language, oral mazing, and abandoned utterances. As much meaning is communicated by the context and nonverbal behaviors as words themselves. In contrast, school presents children with a “literate

style” of language including unfamiliar vocabulary and increasingly complex syntax. The context is created by words with little picture support provided in texts or oral lectures.

Syntactic Acquisition from Reading. Syntax refers to the organization of words into meaningful units. Children acquire the basic grammatical structures of language prior to schooling, but the complexity of phrases as well as number of embedded and conjoined clauses increases steadily with each grade level. Poor processing of the complexities of language will both affect the acquisition of fluent reading and interfere with comprehension of information that is read. Hall and Ramig (1978) noted that sentence is the minimal unit of language for communicating meaning. Successful reading is not about decoding sounds and words, but decoding sentences. To comprehend whole text, the reader must first comprehend the sentence. Chomsky (1957) described syntax according to its *surface* and *deep structure*. The surface structure in print refers to the visual information on the page or the actual words and word order represented in graphic symbols). The deep structure refers to the underlying structure of the language, where the component phrases of a complex sentence are identified and their relationships specified to result in meaning. Thus, comprehension is the translation of the surface structure into the deep structure (Dechant, 1993). In oral language, intonation is an important element of the surface structure. It communicates the junctures between clauses as well as the illocutionary function of the sentence. In written language, the reader must gather cues as to the intonation of the text by observing the punctuation and capitalization of sentences.

Vocabulary Acquisition from Reading. Vocabulary acquisition is rapid during the school years, with estimates from 2000 to 5000 words learned each year, much of it from reading. Many teachers assume that to enrich a child’s vocabulary they must provide word lists and accompanying definitions for children to memorize. However, Hall and Ramig (1978) stress that

teaching vocabulary in isolation rather than in context is “insufficient” and may limit children’s ability to interpret meanings from surrounding context. Dechant’s (1993) literature review revealed kindergarteners who were taught words in sentences learned vocabulary more rapidly than children who were taught vocabulary in isolation, and word recognition for poor readers is faster for words taught in context versus words taught in isolation. Dechant also noted several studies that showed the opposite. Hall and Ramig (1978) recommended the use of meaningful, context-rich text so that children actively learn to use the meaning they have gained while reading to interpret text.

Discourse Acquisition from Reading. Oral language development and competence is much like literate language development and competence (Dechant, 1978). To produce meaningful oral language, the speaker must control the topic, logically select and organize information, utilize cohesive devices to connect words to create meaning, and maintain fluency. This process is complex and poses challenges for those with language and learning disorders. Not only are children required to comprehend text, they must also comprehend abstract directions and ideas from lectures and classroom directions. Additionally, they may be required to speak in class, all the while monitoring what they say. Hoskins (1990) suggested that classroom discussion is critical to developing literate language discourse. Engaging in conversation provides opportunities to pool children’s collective knowledge to interpret a speaker’s meaning and to plan and modify one’s own words to meet the needs of the listener (Fahey & Reid, 2000).

### Comprehension Interventions

The focus in teaching reading comprehension has changed throughout the years. At the beginning of the twentieth century teachers shifted from an emphasis on strengthening

comprehension by improving oral reading to an emphasis on silent reading for comprehension. After reviewing reading approaches from 1910 to 1987, Robinson, Faraone, Hittleman, and Unruh (1990), concluded that the most worthwhile comprehension strategies included schema activation, utilizing text structure clues such as headings and topic sentences, and self-monitoring. Schema activation involves accessing prior knowledge to arrive at meaning. Significant improvement in comprehension has been shown to occur when readers are engaged in prereading activities, asked questions prior to reading, or developed semantic maps of information prior to or during reading (Dechant, 1993).

Text structure instruction also has been found to improve comprehension. Studies have shown improvement for both expository and narrative text when text grammar was explicitly taught. Robinson et al (1990) showed students who combined prior knowledge with text structure through flowcharts were better at reading the text. Self-monitoring was also shown to improve comprehension in several studies (p. 84). When students were taught to reflect on the text they had read, Helseth (1926) found they became better at comprehending (as cited in Robinson, et. al., 1990). Palinscar and Brown (1984) concurred with earlier work in this area. They found that after several weeks of teachers modeling summarization, questions, clarification, and prediction, that middle school students out performed control groups with regards to reading performance and continued the superior performance even after eight weeks of no instruction (as cited in Flood, Jensen, Lapp, & Squire, 1991).

Exercises and drills have been widely used in the past and continue to be a frequently used comprehension teaching strategy. Materials designed to systematically teach a skill or series of skills are presented, often on worksheets. During the 1960's, reading specialists became disappointed by basic skills instruction. Debates continued between two sides, those that wanted

to teach from whole-to-part and those that wanted to teach from part-to-whole. While conversation continued among the opposing groups, children's scores on standardized tests were lacking, seemingly due to the skills based approach (Flood et al, 1991).

Additional comprehension strategies include passage rereading, reading practice, and study skills lessons. Romanes (1884) and Yokam (1921) concluded that to fully comprehend text the reader must reread. Studies involving rereading included such study skills as summarizing, outlining, and underlining (as cited in Robinson, et al., 1990). Robinson's synthesis of research indicated that some studies revealed statistical significance following rereading while others did not. Many researchers believed that intensive silent reading would improve the readers' comprehension. However, research into reading practice in the 1920's and 1930's revealed that frequent reading did not improve comprehension of poor readers. Study skills, such as summarizing, outlining, notetaking, and underlining, have also been researched for improvements in reading comprehension. However, much of the research was unclear as to whether the participants knew how to utilize these skills while reading, thus results were not reliable. However, many researchers emphasize the importance of summarization as a comprehension strategy (Robinson, et. al, 1990).

### Compensatory Approach

Section 504 of the Rehabilitation Act of 1973 has become an important player in the public school system. Under Section 504, children have the right to free, appropriate public education and to extracurricular activities. This law attempts to create an equal opportunity for individuals with disabilities to be successful. Among the populations of children covered under this law are students with a learning disability. Section 504 mandates that these children receive free and appropriate education, thus provisions must be made to meet their needs within the

nondisabled setting “to the maximal extent appropriate” (Smith, 2002). One way in which schools are able to provide appropriate education is to offer accommodations for students with disabilities. These accommodations must be “meaningful” to the disabled student and not interfere with the learning of his nondisabled peers (Smith, 2002). Examples of accommodations include special seating arrangements, testing modifications, materials read aloud, taped materials, and homework modifications.

### Intervention Approaches

As indicated previously, simply removing the barrier to LLD children’s decoding issues by reading class materials aloud is not going to aid these children in their present and future one-on-one interactions with text. Literate adults can not accompany these children through out their lives and read text so as not to impede comprehension. They need to learn strategies which will eventually enable them to read and comprehend text independently.

Communicative Reading Strategies. Communicative Reading Strategies (CRS) (Norris, 1985; Norris, 1988) is a reading approach based on social interaction between the reader, the author (i.e., text), and an adult who facilitates the language experience through scaffolding techniques. The adult assists by monitoring the reader’s fluency and comprehension, and supplying assistance when difficulties arise. Strategies that aid in extracting meaning from the text include activating the reader’s prior knowledge, parsing complex sentences into constituent clauses, expanding on ideas from the text, and modeling appropriate inferences.

Several studies have assessed the efficacy of CRS within different populations. One study compared the effects of CRS with the effects of a direct reading approach with first graders; a second study examined the effects of CRS on first graders when compared to a control group of peers (did not participate in reading activities in tx, only at home); a third study assessed the

outcome of CRS intervention against skills-based instruction with adult low-ability readers; and the fourth study examined the use of CRS versus a skills approach with struggling college students.

In a study involving four low SES first graders exhibiting poor reading skills, Badon (1993) compared the effects of CRS to a directed reading approach using an alternating treatment design for single participants. Changes in reading accuracy, rate, fluency, and story retelling were examined after two, thirty-minute treatment sessions each day for five days. Although Badon's findings were not statistically significant, trends favored CRS intervention. Results indicated that under the CRS condition, participants produced fewer miscues, consequently increasing the reading rate. Story retellings included more grammar components, more episodes, increased length, fewer maze behaviors, and more interepisodic relations.

Michaelson (1995) utilized a pretest-post-test control group design (Borg & Gall, 1989) to compare the effects of CRS to a group that served to control for changes in maturation or general curriculum effect with at-risk first graders. The treatment group received intervention four days per week for 45 minutes each day for eight weeks. Performance was measured using standardized reading and language measures and informal language measures during pre-treatment and post-treatment. Michaelson found that the CRS group demonstrated significant gains with regards to the standardized test and informal reading assessment. In addition, treatment participants improved in the areas of word recognition, reading rate, comprehension, and word analysis skills. She indicated that although differences were not found between groups with respect to oral language abilities, improvements made by treatment participants positively influenced language abilities.

Reichmuth (1996) investigated the efficacy of CRS with adult low-ability readers as compared to a group receiving skill-based instruction. Each subject received 40 hours of instruction. To compare groups, changes were analyzed at pretest and post-test regarding word recognition, comprehension, and reading rate. Results indicated that both methods of instruction aided in word recognition and comprehension abilities for most participants. In addition, although results did not reach a level of significance, for individual participants, word recognition and comprehension results favored the CRS group.

Martino (1998) studied the effects of CRS on college freshman struggling with expository text. Participants included 4 college freshmen participating in the CRS group and 4 in a skills approach group. Each group received a total of 24 hours of instruction over a period of eight weeks. Performance was measured using pretest-post-test results of a standardized measure of reading comprehension and weekly probes measuring comprehension of literal and inferential questions based on biology and expository text. Based on the standardized measure, both groups improved on comprehension of inferential questions. Although differences were not statistically significant, trends favored the CRS group, as demonstrated by participants reaching a college level of readability and improved performance on literal comprehension. In addition, the CRS group outperformed the skills group on inferential questions from the weekly probes. Martino concluded that the CRS group aided students in reaching a college reading level and effecting change faster than the skills approach.

A common compensatory strategy for students with learning disabilities is to have material read aloud to them for tests and classroom projects. It is assumed that their primary barrier to success is the inability to decode words and achieve fluency of reading. When this barrier is removed by having text read to them, the assumption is these students will then be able

to learn the information and acquire comprehension skills in a manner similar to their peers. An alternative view is that beyond elementary grades, the complexities in written language exceed the average child's oral language abilities. Language growth during upper elementary and middle school is largely promoted through reading and interpreting text. For low ability readers, the Matthew's effect (Juel, 1988, as cited in Gough, Ehri, & Treiman, 1992) therefore prevails, that is the rich get richer and the poor get poorer. Loban (1976) showed that poor readers enter school with lower abilities in language and that the gap between high and low readers increases with grade level (as cited in Flood, et al., 1991). The lack of engagement in reading and interpreting text further limits growth in vocabulary, syntax, inferential comprehension, interpretation of metaphoric language, and complex discourse structures found in literate language. Therefore, when text is read to these students, they are more limited in their ability to comprehend the information, even when engaged in a discussion of the story or textbook.

The purpose of this study is to examine the efficacy of having material read to and discussed with learning disabled students (i.e., a compensatory approach termed Accommodated Reading in this study) compared to teaching the literate language of text structures to students (i.e., a language intervention approach termed Communicative Reading Strategies). The relative effects of each condition will be compared for comprehension of the story. Two questions were posed by this study: (a) will middle school students classified as LLD, reading grade level expository text, answer a greater number of literal and nonliteral comprehension questions following CRS instruction compared to AR compensation, and (b) will middle school students classified as LLD demonstrate post-test gains on standardized measures of reading comprehension following 5 ½ weeks of intervention?

## METHOD

Two groups of students participated in their regular literacy lab for 16 sessions across 5 ½ weeks. Sessions met 3 times per week for 40 minutes each. Each group received alternating treatment conditions using an ABAB design. Each treatment condition was implemented for 4 consecutive sessions followed by 4 sessions of the alternate condition, until 2 cycles under both conditions were completed. Both groups read and discussed the same book throughout the 40-minute session using the respective treatment approach (i.e., listening comprehension versus Communicative Reading Strategies). At the end of each treatment session, a comprehension probe was administered. Participants were compared for comprehension of the text read across time. Gains in reading scores on the Gray Oral Reading Test – Third Edition and Gray Silent Reading Test at pretest and post-test was compared across participants.

### Participants

Participants for this study were 5 middle school students from Galvez Middle School who qualified for speech and language services. The participants included two 5<sup>th</sup> grade females with a mean age of 13;5 (13;1, and 13;8), one 6<sup>th</sup> grade female with an age of 13;8, and two 6<sup>th</sup> grade males with a mean age of 13;2 (13;0 and 13;3).

Participants were chosen from a pool of 12 students who participated in the Language Literacy Lab. The Language-Literacy Laboratory at Galvez Middle School is a unique service delivery model that allows the speech/language pathologist to provide a firm foundation of basic language skills for all special needs students in the school, as well as the speech/language impaired students. The lab is a comprehensive language program that bombards the language delayed/disordered student with a multitude of strategies to be utilized in teaching the basic language concepts necessary for academic success in reading, math, and language arts.

Participants were those who met subject selection criteria and who returned a signed consent form.

### Selection Criteria

The following criteria were used to select the participants:

1. Enrolled in 5<sup>th</sup> or 6<sup>th</sup> grade.
2. Receiving instruction in the Language Literacy Lab at Galvez Middle School;
3. Identified as Learning Disabled according to criteria of the state of Louisiana;
4. Obtained a score at least one standard deviation below the mean on the Gray Silent Reading Test (GSRT), (Wiederholt & Blalock, 2002), or
5. Obtained a score of at least one standard deviation below the mean on the *Comprehension* subtest of the Gray Oral Reading Test-Third Edition (GORT-3), (Wiederholt & Bryant, 1992).
6. Had normal vision and hearing.

Louisiana's Handbook for Students with Learning Disabilities, defines learning disability as follows:

“ . . . a severe and unique learning problem as a result of significant difficulties in the acquisition, organization, or expression of specific academic skills or concepts. These learning problems are typically manifested in school functioning as significantly poor performance in such areas as reading, writing, spelling, arithmetic reasoning or calculation, oral expression or comprehension, or the acquisition of basic concepts” (p. 12).

Participants were identified by a multidisciplinary team and had an IEP qualifying them for services in the Language Literacy Lab.

### Consent

Participants who met initial selection criteria were invited to participate in the study. The purpose and requirements of the study were briefly explained. Consent forms were sent to

potential participants’ parents explaining the goals of the study and describing their child’s participation (see Parental Consent Form, Appendix A). When consent forms were returned, the study was again explained to participants and questions were answered. If students agreed to participate they were asked to sign assent forms (see Appendix B) to participate in the study. Each subject was assigned a research subject number. All data was recorded and reported according to this research subject number.

Silent and Oral Reading Pretest/Post-test

Participants were given Form A of both the Grey Silent Reading Test (GSRT) and Grey Oral Reading Test-Third Edition (GORT-3) to determine eligibility for participation. These assessments also served as pretest data. Form B of both instruments were administered at post-test following 5 ½ weeks of intervention.

Table 1

Profile of Participants by Age, Grade, Exceptionality, and Initial Reading Scores

Number	Age	Grade	Exceptionality	<u>GORT-3</u>	<u>GSRT</u>
1	13;1	5 <sup>th</sup>	LD	-2.7	-2.1
2	13;8	5 <sup>th</sup>	LD	-1.7	-2.9
3	13;8	6 <sup>th</sup>	LD	-2.3	-2.3
4	13;0	6 <sup>th</sup>	LD	-1.3	-1.3
5	13;3	6 <sup>th</sup>	LD	-2.7	-1.6

The GSRT assesses comprehension of silent reading and consists of 13 reading passages followed by 5 multiple choice questions based on literal and inferential comprehension. The GSRT was administered in groups of 3-4 children. The GORT-3 assesses oral reading abilities in

the following areas: reading rate, accuracy, comprehension, and total oral reading ability. The GORT-3 is comprised of 13 reading passages that increase in length and complexity. After reading each passage aloud, 5 multiple choice comprehension questions based on literal and inferential content are read while participants read along. The GORT-3 was administered individually.

### Procedures

All testing and intervention was performed in the Language Literacy Lab at Galvez Middle School where the researcher was a student clinician for 2 ½ years. All work was done under the supervision of Susan Fauchaux, M.A., CCC-SLP. All data collection and intervention was conducted by the researcher and a doctoral student from LSU. The doctoral student was completing a Clinical Fellowship Year in part at Galvez Middle School. The researcher and CFY clinician had received instruction in both treatment conditions used in this study, including coursework, in-service, and supervised practicum. All treatment sessions were videotaped to ensure intervention reliability and to provide a source of qualitative analyses of data and data interpretation.

Treatment Conditions. Each student received 16 treatment sessions consisting of 8 Accommodated Reading sessions and 8 Communicative Reading Strategies sessions. The 8 sessions was divided into 2 cycles of 4 consecutive sessions under each condition across 5 ½ weeks in an ABAB design.

Communicative Reading Strategies Treatment. Each 40-minute treatment session consisted of scaffolded reading of 1-2 episodes from a chapter of the book Hatchet (Paulsen, 1987). Forty minutes was devoted to having students read the book orally under scaffolded conditions. Ten

minutes was used to complete comprehension probes. The following Communicative Reading Strategies were used to provide support and to teach difficult language during the reading.

1. Sentences were read interactively so that a) the adult provided a preparatory set to cue the concepts to read in that sentence, b) the student read the text while the adult evaluated what is not understood based on miscues and incorrect intonation and phrasing, and c) the adult pointed to problematic words, phrases, or concepts in the book and provided feedback to teach the problematic language.
2. While pointing to the problematic words or phrases in the text, the adult can choose to use one or more CRS strategy to address the problematic language. These strategies include:
  - a. providing a synonym, explanation, or definition for an unrecognized word or concept (“It means X, its like X);
  - b. parsing a complex grammatical sentence into the component phrases, reading each phrase with a prep set, and explaining the meaning of each phrase as well as the relationships between them (first find out where he went; now find out why that was surprising [prep sets]; it tells me *even though* [point to these connecting words in the sentence] so I know it was unexpected or surprising).
  - c. pointing cohesively between pronouns, relative pronouns, general terms and other cohesive ties and their referents within and across the boundaries of the sentences in which they are found (*he*, the man who was on the boat, *he* is looking suspiciously at the suitcase).
  - d. pointing to a word or phrase that requires an inference to understand the implied meaning and prompting students to provide an interpretation (This says that he

looked suspiciously, I wonder why? Why would he be suspicious about that suitcase? Remember a few sentences ago when it said ...)

- e. using stick figure drawings to explain or visualize confusing actions or concepts such as metaphors (“sheep as thick as ants at a picnic” drawn to show parallels between the many ants attracted to food and the appearance of sheep on the hill).
  - f. using “framed” drawings to show how 2 or more sentences are actually present within a single complex embedded sentence, and how grammatical words such as “that” or “when” signal these transformations.
3. As the reading progresses, a storyboard was used to map out the key elements of the plot. Students were asked to evaluate whether information just read in a paragraph addresses one of the discourse elements (setting, problem, plan, attempt, outcome, evaluation). Feedback was given on the accuracy of their judgment (If that is the problem, then explain to me what needs to be solved. Is that a problem, or just detail in the story?).

Accommodated Reading. Each 40-minute session consisted of oral reading and discussion of 1-2 episodes from the book Hatchet (Paulsen, 1987). Participants silently followed along in their own books while text was read aloud by the researcher. The following strategies were used to aid in comprehension of the text:

1. Prior to each accommodated reading (AR) session, participants were provided with a vocabulary worksheet. Each vocabulary word was read and participants were asked to provide a definition. Next, the researcher provided the definition to the participants and presented the word in a sentence.
2. Once vocabulary words were defined and discussed, the episode was read aloud by the researcher. After each important concept, participants were asked questions related to

content, vocabulary, or inferential meaning. If the participants provided incorrect information, the researcher then returned to the story, reread the selection and explained.

3. At the end of episodes or chapters, students were asked to summarize the events of the story. Prompts were given to help them remember important events or details.

### Probes

During the last 10 minutes of each treatment condition, comprehension and rereading probes were obtained from each subject under both treatment conditions. Comprehension probes were administered first and consist of 13 multiple choice questions, 3 requiring literal recall and 10 requiring interpretations of the language and inferences implied by the story. Participants were given a written multiple choice test with 4 potential responses per question.

Comprehension probes were scored for correct responses and types of questions responded to correctly or incorrectly.

### Materials

Materials for treatment sessions consisted of a single book that was read throughout all treatment sessions, white boards and markers, researcher prepared worksheets for the Accommodated Reading condition, Storyboard forms for the Communicative Reading Strategy condition, and researcher designed reading and comprehension probes.

Reading Book. All participants read from the same book, *Hatchet* (Paulson, 1987), during CRS and AR intervention. This book was selected due to its reading level, which was assessed to be at the 5.8 grade readability level. This level was challenging but within the instructional reading level of the participating participants. This book is an adventure story involving a boy surviving a plane crash that is of interest to this age group. It has challenging vocabulary and sentence structures and a complex plot, providing numerous opportunities for

language and reading intervention throughout the episodes. In addition, *Hatchet* (Paulson, 1987) qualifies as an accelerator reading book by the middle school. Thus, children earn accelerator-reading points after they have read the book and completed a story-based test that applies to their reading grade in regular education. This serves as an incentive to read and understand the story at a sufficient level of detail to pass the test.

Storyboard. During CRS intervention, children were provided with a storyboard form, which was used to record the key story structure elements of the episode. A storyboard form consists of picture stimuli that correspond to the 8 structural elements of story grammar (Stein & Glenn, 1979). For example, a picture of a watch corresponds to the element ‘time’ or when the episode took place. The 8 elements are time, characters, place, problem, plan, attempt, outcome, and evaluation.

Dry Erase Board. A dry erase board and markers was present for both intervention conditions. This was used to help define vocabulary or in other ways clarify the lesson. During the CRS intervention, the researcher used the board to draw pictures to clarify concepts. For example, if the phrase “The fish flashed away” is not understood, the researcher would draw a fish with lines flashing behind it to represent rapid movement.

Worksheets. During AR intervention, vocabulary sheets corresponded with the episodes and chapters of *Hatchet* (Paulson, 1987), and focused on new vocabulary important to understanding the story. At least one worksheet was worked on each day that introduced new vocabulary prior to reading the text.

Probe Stimuli. Sixteen probes were obtained from each subject, or one following each treatment session. The same probes were administered to groups currently in the CRS treatment and the AR treatment throughout the study. Probes consisted of a written multiple choice

comprehension test. All questions and response choices were read to participants while the student followed along reading silently.

Each written comprehension probe consisted of 13 questions. Three of the questions consisted of questions that required literal recall of information read [Brian's mother gave him a

\_\_\_ a) cell phone b) hatchet c) Bowie knife.] Ten of the questions were designed to

determine if students understood the language of the text (see Appendix B). These included:

One question that required an interpreted meaning of a vocabulary word (The fish *flashed* away before he could spear him)

One question that required associating an unfamiliar word from the story with a familiar vocabulary word that was a synonym

One question that interpreted the feelings or attitude of the character

One question that required deriving the main idea of a paragraph or passage

Two questions that required understanding an element of syntax or cohesion from the text (What does the word "after" mean in this sentence "When he is finally rescued after living alone by the lake for 54 days)

Two questions that required interpretations of information given in the text but not directly stated (Why did Brian wake up with a stomach ache?)

Two questions that required inferences (How did Brian survive the impact of the plane?)

[information given (he survived the impact) but never explained, would require the child to use prior knowledge or predictions based on the larger context of the story]

### Scoring

Scoring was conducted following each treatment session by the researcher. All probes were identified by the subject's assigned research number and by date.

Comprehension Probes. Responses to comprehension probes were scored as correct or incorrect. In addition, a profile was maintained on the types of questions that were responded to correctly versus incorrectly for the probes across treatment conditions and time.

### Reliability

The fidelity of treatment conditions was assured by evaluating 20% of the videotapes of treatment sessions. An individual not involved in the study and naïve to the questions of the study was given criteria for each treatment condition. They then watched the randomly selected videotapes and rated on a scale of 1 to 5 how well the treatment shown on the videotape conformed to each descriptor of the treatment as profiled in the description of Treatment Conditions above.

## RESULTS

This study compared the relative effectiveness of Communicative Reading Strategies (CRS) to a compensatory approach (termed Accommodated Reading) on the comprehension of middle school students who were classified as language-learning disabled (LLD).

### Comprehension of Narrative Text

Table 2 profiles the number of correct responses to the 3 *literal questions* asked at the end of each CRS and AR session. A block of 4 treatment sessions was implemented before switching to the alternate treatment, thus, the total number of correct responses (from a total of 12 possible) is summed for each block. Inspection of this table indicates that for the 6<sup>th</sup> grade students (i.e., students 3, 4, and 5) the number of correct responses to literal questions was consistently higher for the CRS groups in both 4-session blocks. Of the 5<sup>th</sup> graders (i.e., students 1 and 2) student 2 answered more literal questions correctly for both AR blocks while student 1 was inconsistent. The number of correct responses to literal questions did not show a systematic increase across the successive 4-week blocks of time.

Table 3 profiles the number of correct responses to the 10 *nonliteral questions* asked at the end of each CRS and AR session. A block of 4 treatment sessions was implemented before switching to the alternate treatment; thus, the total number of correct responses (from a total of 40 possible) is summed for each block. Inspection of this table indicates that in general the number of correct responses to inferential questions increased across time (i.e., increasingly more total correct responses were obtained from block 1 to block 2, from block 2 to block 3, and from block 3 to block 4). This trend held for all 5 students. For students 1 and 2 who received the CRS treatments for the 1<sup>st</sup> and 3<sup>rd</sup> blocks, the CRS condition resulted lower scores for the

first block, but resulted in more correct responses than either of the AR blocks for the 3<sup>rd</sup> sessions.

Table 2

Number of Correct Responses to 3 Literal Comprehension Questions by Daily and by Four-Session Totals.

	1	2	3	4	Total (of 12)		5	6	7	8	Total (of 12)
<u>Student 1</u>											
CRS*	2	2	2	2	8	3	2	2	3	10	
AR	3	3	2	3	11	2	3	1	3	9	
<u>Student 2</u>											
CRS*	2	3	2	2	9	2	2	3	3	10	
AR	3	3	3	2	11	3	3	3	3	12	
<u>Student 3</u>											
CRS	3	3	3	2	11	2	2	3	3	10	
AR*	3	2	2	1	8	2	1	3	2	8	
<u>Student 4</u>											
CRS	3	3	3	2	11	3	3	3	3	12	
AR*	2	3	1	2	8	1	2	2	2	7	
<u>Student 5</u>											
CRS	3	3	3	3	12	3	3	3	3	12	
AR*	2	3	2	2	9	3	2	3	2	10	

\* Treatment condition implemented for 1<sup>st</sup> and 3<sup>rd</sup> 4-session block

Thus, for both 5<sup>th</sup> and 6<sup>th</sup> grade students, the CRS condition resulted in a greater number of correct responses to nonliteral questions in the later weeks of the study whether the CRS condition occurred in the 3<sup>rd</sup> or 4<sup>th</sup> block of the study.

Table 4 profiles the average number of total literal and nonliteral comprehension questions answered for each subject across the 8 CRS and AR sessions. Means and standard deviations are shown for the CRS and AR phases. The table reveals participants 3, 4, and 5 presented higher mean scores for comprehension questions following the CRS instruction as predicted, while participants 1 and 2 showed higher scores following the AR phases. To

determine if these changes were meaningful, t-tests were used to compare means for each subject. T-tests require the assumption that pairs of observations within and across conditions are independent, normally achieved through random assignment of participants to a condition.

Table 3

Number of Correct Responses to 10 Nonliteral Comprehension Questions by Daily and by Four-Session Totals.

	1	2	3	4	Total (of 40)		5	6	7	8	Total (of 40)
<u>Student 1</u>											
CRS*	2	4	6	7	19	8	7	10	6		31
AR	7	6	6	3	22	7	7	7	9		30
<u>Student 2</u>											
CRS*	5	6	7	7	25	9	5	10	9		33
AR	8	10	5	5	28	8	8	9	9		31
<u>Student 3</u>											
CRS	7	7	7	5	26	7	7	9	8		31
AR*	5	8	6	7	26	5	7	6	9		27
<u>Student 4</u>											
CRS	10	9	7	5	31	8	9	9	9		35
AR*	6	7	6	9	28	10	5	9	9		33
<u>Student 5</u>											
CRS	9	9	8	6	32	7	7	9	9		32
AR*	6	6	8	7	27	8	9	7	7		31

\* Treatment condition implemented for 1<sup>st</sup> and 3<sup>rd</sup> 4-session block

To illustrate independence within the single subject design of this study, serial independence of data was demonstrated within phases. To assess whether data was serial dependant, autocorrelations were completed for scores within each phase. As indicated by Table 5, there were no strong correlations for each subject between scores within each individual reading approach, thus one score had no influence on the next. Since there were no strong correlations, one cannot predict the performance of an individual subject at any given time, a desirable outcome in the present study.

Table 4

Mean Number of Total Correct Responses to Comprehension Questions for CRS and AR Conditions.

Subject	CRS		AR		t	Prob
	Mean	S.D.	Mean	S.D.		
1	8.50	2.56	9.00	1.77	-0.454	0.657
2	9.63	2.20	10.25	2.05	0.588	0.566
3	9.75	1.49	8.63	1.30	1.609	0.130
4	11.13	1.89	9.50	1.85	1.739	0.104
5	11.00	1.20	9.63	1.06	2.434	0.029

The data collected within each phase of treatment met the independence-of-error assumption, thus a traditional t-test was performed to determine if the number of correct responses to questions differed significantly between CRS and AR phases of intervention. The t-test indicated that CRS and AR phases were not statistically significant at the .05 level for participants 1, 2, 3, and 4. However, subject 5 did reach statistical significance, with scores favoring CRS intervention.

Table 5

Pearson Correlations Between Participant's Scores in CRS and AR Conditions.

SUBJECT	CRS	AR
1	-.575	-.091
2	-.168	.020
3	.216	.200
4	.313	-.533
5	.285	.435

## Standardized Measures

Question two examined whether middle school students classified as LLD would demonstrate post-test gains in comprehension on standardized measures following 5 ½ weeks of intervention.

Two measures of reading comprehension were obtained at pretest and post-test. Alternate forms were administered immediately prior to and after the intervention period of five and one-half weeks. The first (GORT-3) was a measure of comprehension following oral reading, while the second (GSRT) was a measure following silent reading. Comparisons were made for gain scores between pretest and post-test administration of each test.

GORT-3 Gain Scores. Although the GORT-3 assesses 3 different areas, for the purpose of the present study, only the comprehension score was computed. The scores for comprehension are reported by the standard deviation from the mean and are presented in Table 6. These results represent comprehension to literal and inferential questions immediately prior to and after the intervention period of five and one-half weeks. The standard error of measure for the GORT is a standard score of 1. Thus, any score within the range of  $\pm 1$  reflects SEM at the 68% probability level. Only subject 5 showed an increased gain score, while the other participants' scores at post-test were within 1 SEM from pretest.

GSRT Gain Scores. Scores on the GSRT are reported by Quotient scores and standard deviations from the mean (Table 7). Results represent GSRT comprehension of literal and nonliteral questions for narrative text read silently. Pretest and post-test measures were obtained immediately prior to and following the intervention period of five and one-half weeks. When scores were adjusted for standard error of measurement only Student 3 demonstrated a positive gain from pretest to post-test, while Student 5 demonstrated a loss. The Grade Equivalent scores

also are reported for Pretest. These scores indicate that all students were 3 or more grade levels below their actual grade for comprehension of information read silently.

Table 6

Pretest-Post-test Gain Scores Reported in Standard Deviations and Adjusted for Standard Error of Measurement for the Comprehension Subtest of the GORT-3.

Student	Pretest	Post-test	Gain	
	SEM + <u>1</u>			
1	-2.7	-2.7	0	No Gain
2	-1.7	-2.7	-1.0	No Gain
3	-2.3	-1.7	+6	No Gain
4	-1.3	-2.0	-.7	No Gain
5	-2.7	-.7	+2.0	Gain

Table 7

Pretest-Post-test Gain Scores Reported in Quotient Scores and Standard Deviations and Adjusted for Standard Error of Measurement for the GSRT.

Student	Pretest Q/s.d.	Grade Equivalent	Post-test Q/s.d.	Q	Gain +4	SEM
1	69/-2.1	2.5	70/-2.0	+1	No Gain	
2	57/-2.9	1.2	57/-2.9	0	No Gain	
3	65/-2.3	2.2	80/-1.3	+15	Gain	
4	80/-1.3	3.2	84/-1.1	+4	No Gain	
5	76/-1.6	3.0	63/-2.5	-13	Loss	

## DISCUSSION

The purpose of this study was to compare the relative effectiveness of Communicative Reading Strategies (CRS) to a compensatory approach (termed Accommodated Reading) on the comprehension of middle school students who were classified as language-learning disabled (LLD). This chapter is divided into three sections. The first section contains a discussion of the results of the study as they relate to the two questions posed in the introduction. The second section considers the clinical implications of the findings. Lastly, the third section presents a discussion of the limitations of the study and suggestions for future research in this area.

### Alternating Treatment Probes

The first question of this study explored whether middle school students classified as LLD, reading grade level narrative text, would answer a greater number of literal and nonliteral comprehension questions following CRS instruction compared to Accommodated Reading (AR) compensation. Since CRS focused on examining specific structures and phrases within sentences from which information must be gleaned and inferences drawn (i.e., shown how to interpret the language of text), it was proposed that when provided this input students would show better comprehension than when text was simply read to them. At the end of each treatment session, comprehension was measured through probes comprised of literal and nonliteral questions that related to the text.

The pattern of literal questions did not show systematic increases or decreases across the time of the study, although for the 6<sup>th</sup> grade students the CRS blocks resulted in consistently more correct responses. The correct responses to nonliteral questions did increase across time for all 5 students, with the 6<sup>th</sup> grade participants receiving consistently higher scores for the CRS blocks. However, only one subject demonstrated a statistically significant difference between

conditions, with better comprehension within the CRS intervention. The 2 other 6<sup>th</sup> grade participants showed trends in the direction of the CRS intervention but these did not reach significance.

As discussed in the introduction, group intervention is problematic because materials must address the needs of the group but it is difficult to find one book that is appropriate for all group members when their actual reading levels differ. The book in this study was selected because the publisher indicated the text was at a reading grade level of 5.8, and recommended for ages 12 and up. However, when a Fry Readability formula was applied (Fry, 1968), the text was calculated to be at a 7<sup>th</sup> grade reading level, a level that may have presented too many unknown concepts and difficult syntax for the 5<sup>th</sup> grade students. These participants demonstrated the least benefit from the CRS interaction, followed by student 3. Grade equivalent scores obtained from the GSRT showed that these 3 students all had a silent reading comprehension level at 2<sup>nd</sup> grade or below at the beginning of the study.

These findings revealed that the trends in the data favored the CRS participants, especially for inferential questions and for 6<sup>th</sup> grade participants, but the results were not significant. This outcome is similar to earlier studies (Badon, 1993; Martino, 1998; Reichmuth, 1996). This could be related to the level of difficulty of material used, which may have presented too many word recognition and language challenges, or to the short length of the intervention period and multiple interruptions from LEAP testing and other school events.

### Standardized Test Measures

The second question addressed whether middle school students identified as LLD would demonstrate post-test gains on standardized measures of reading comprehension following 5 ½ weeks of intervention. If students did show increased performance on daily probes, would these

results also be evident on a standardized measure where the reading materials were not orally read to, discussed, or explored with the students?

The results of the GORT were consistent with the profile of the daily probes. That is, the only gain that was greater than the SEM was for the same subject who showed significantly better performance for the CRS condition. The GORT measures comprehension following a student's oral reading of graded passages. Results of the GSRT which measures comprehension following silent reading showed a gain score for Student 3, which was not consistent with the profile presented on daily probes. The short period of intervention between the pretest and post-test administrations of the tests was not sufficient to determine if actual learning was occurring as a result of intervention.

#### Limitations and Suggestions

Although results of the study provided empirical support for a more meaning-driven intervention for those with LLD, the study was not without its limitations.

First, although raw data favored CRS for the majority of participants, the failure to reach statistical significance for most participants limits the interpretations of the results. At best they suggest that a longer period of intervention may have resulted in group differences if trends had continued, at least for the 6<sup>th</sup> grade participants and 5<sup>th</sup> grade inferential questions. In addition, the small sample size reduces the power of the statistical measure. Moreover, the sample size places confines on the generalization of the findings. Consequently, replication with a larger sample size and longer period of intervention would be required to determine if middle school students would benefit from CRS interactions.

Second, no measures of oral reading fluency were obtained in this study. To determine whether CRS was having an effect on word recognition and fluency, probes would require

obtaining a measure of oral reading accuracy and speed as well as comprehension. This information could provide insights into to apparent contradictory standardized gain scores obtained pretest and post-test for students 3 and 5.

Third, CRS is a complex intervention requiring knowledge of language acquisition and characteristics of those with language disorders. Thus, unlike passively reading text aloud to students, CRS instruction is a contextualized approach and requires training to implement.

Fourth, the readability level of the text used in the study was at a higher level when subjected to a Fry Readability formula (Fry, 1968) than that used by the publisher. The discrepancy between the reading level of the students, particularly the 5<sup>th</sup> graders, and the level of the text may have been too great for optimal learning. Use of a text closer to the students' actual readability level may have resulted in greater change within the short duration of a future study.

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## APPENDIX A

### PARENTAL PERMISSION FORM

- Project Title:** A Comparative Study of Two Treatment Approaches for Improving Middle School Students Reading Comprehension
- Performance Site:** Galvez Middle School
- Investigators:** The following investigator is available for questions, M-F, 8:00 a.m.-4:30 p.m.  
Dr. Janet Norris  
Communication Sciences and Disorders Dept., LSU  
(225) 578-3936
- Purpose of Study:** The purpose of this research project is to develop effective reading strategies for students who have difficulty with reading comprehension.
- Inclusion Criteria:** Students in 5th through 8th grade who participate in Galvez Middle School's Language Literacy Lab.
- Exclusion Criteria:** None
- Description of Study:** Over a period of 5 1/2 weeks, your child will participate in either one of two groups that focus on increasing reading comprehension. The investigator may videotape all or part of the teaching lessons. These videotapes will only be used for purposes of this research. Signing this form says you agree only to allow us to videotape your child and to use these videotapes to observe your child's learning for this project. Your child's videotape will not be shown to anyone for any purpose without your additional permission.
- This project seeks to learn how to better teach students with reading comprehension difficulties. Signing this form indicates that you agree to allow your child to be tested at the beginning and end of the project to determine his/her reading level and to participate in sessions aimed to increase reading comprehension.
- Potential Risks and Benefits:** There are no risks for students participating in this study. Students will be participating in regular classroom activities with their regular teacher throughout the 8 weeks. Reading material for the study is developmentally appropriate for your child's age. The test results will only be used to determine how well the reading comprehension strategies work, and will not be used to make educational decisions about your child. Testing and intervention will be done at the child's school building during

regular school times. There is no cost to you or to your school for participating.

**Right to Refuse:** Participation is voluntary, and a child will become part of the study only if both child and parent agree to the child's participation. At any time, either the subject may withdraw from the study or the subject's parent may withdraw the subject from the study without penalty or loss of any benefit to which they might otherwise be entitled.

**Privacy:** The school records of participants in this study may be reviewed by investigators. Results of the study may published, but no names or identifying information will be included for publication. Subject identity will remain confidential unless disclosure is required by law.

**Financial Information:** There is no cost for participation in the study, nor is there any compensation to the participants for participation.

**Signatures:** The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about participants' rights or other concerns, I can contact Robert C. Mathews, Chairman, Institutional Review Board, (225) 578-8692. I will allow my child to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Parent's Signature \_\_\_\_\_ Date \_\_\_\_\_

The parent/guardian has indicated to me that he/she is unable to read. I certify that I have read this consent from to the parent/guardian and explained that by completing the signature line above he/she has given permission for the child to participate in the study.

Signature of Reader \_\_\_\_\_ Date \_\_\_\_\_

APPENDIX B

CHILD ASSENT FORM

I, \_\_\_\_\_, agree to be in a study to find ways to help students increase reading comprehension. I will have to do normal school work for the speech-language teacher. I have to follow all the classroom rules, even when I am working with the teacher's aide. I can decide to stop being in the study at any time without getting in trouble.

Child's Signature \_\_\_\_\_ Age \_\_\_\_\_ Date \_\_\_\_\_

Witness\* \_\_\_\_\_ Date \_\_\_\_\_

\* (N.B. Witness must be present for the assent process, not just the signature by the minor.)

## VITA

Vessa A. Cartmill was born in Oklahoma City, Oklahoma on October 5, 1976. She received her Bachelor of Arts degree in Communication Sciences and Disorders from Louisiana State University – Baton Rouge in May of 2001. Upon completion of her undergraduate studies, Mrs. Cartmill entered the speech-language pathology graduate program in the Department of Communication Sciences and Disorders at the Louisiana State University – Baton Rouge. While attending graduate school, Mrs. Cartmill worked as a student clinician in a Language Literacy Lab at Galvez Middle School in Ascension Parish, Louisiana with Susan Fauchaux, M.A., CCC-SLP. Mrs. Cartmill plans to receive her Master of Arts degree in Communication Disorders in May of 2003.