READING ABILITIES OF LANGUAGE IMPAIRED AND LEARNING DISABLED CHILDREN

A Thesis

by

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ABSTRACT

READING ABILITIES OF LANGUAGE IMPAIRED

AND LEARNING DISABLED CHILDREN (November, 1983)

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The purpose of this study was to investigate the oral reading abilities and the comprehension skills of language impaired and learning disabled children. Oral reading was evaluated with respect to the total number of errors, reading time, and errors influenced by dialect, intonation, graphic similarity, sound similarity, grammatic function, correction, grammatic acceptability, semantic acceptability, meaning change, comprehension, and grammatical relationships. Comprehension skills were evaluated in response to literal and inferred questions.

The subjects consisted of 28 children in first, second, third, and fourth grades who were placed into two groups: a group of 14 language impaired and a group of 14 learning disabled children. The children were identified by prior placement in a language impaired or learning disabled program. Further selection for both groups was based on average performance on the Slosson Intelligence Test for Children and Adults, and for the language impaired group, on subaverage performance

on the Test of Language Development. The groups were matched on the basis of age (± 6 months), IQ (± 10 points), and reading achievement (± 6 percentile points).

Before obtaining a sample of oral reading, reading levels for each of the 28 children were established by administering the Gray Oral Reading Test. The reading levels obtained were used as predicted reading levels for selecting oral reading passages from the Diagnostic Reading Scales. As children read these passages, their errors were recorded and analyzed using the Reading Miscue Inventory.

Results of 34 two-tailed t-tests revealed that the learning disabled made significantly more errors resulting in no meaning change. No significant differences were found on the other variables tested. A post hoc analysis of variance for repeated measures on eight variables-- graphic similarity, sound similarity, grammatic function, correction, grammatic acceptability, semantic acceptability, meaning change, and comprehension-- revealed significant differences between levels of performance on sound similarity, meaning change, and comprehension but no significant difference between the two groups or on the interaction between the groups and the levels.

These results suggest that with one exception, language impaired and learning disabled children performed similarly on oral reading and comprehension tasks.

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To Poppy

You have waited nine years
for something you always knew I could do.

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Chapter 1

INTRODUCTION

In our society, learning to read is "the most significant single accomplishment on which other accomplishments are based" (Allen, 1976, p.36), but before children can become readers, they must become speakers. Reading is parasitic on oral language (Kavanagh, 1968). According to Piaget (1970), spoken language needs to be acquired before written language or reading can be mastered, making reading impossible until children enter the symbolic stage of development. In this stage, children deal cognitively with language and acquire a variety of rules, abstractions, and classifications for concrete objects which are necessary for reading. Although spoken language develops naturally without any formal instruction, reading is a process which must be learned. According to Kavanagh (1968), reading is merely spoken language which is written down. Children use the naturally acquired rules of spoken language as a basis for learning to read.

Research has shown that language deficiencies, both spoken and graphic, may serve as the underlying factors in some learning disabilities. Learning disabled children demonstrate language difficulties in both the processing and production of language. Sounds and letters may be substituted or reversed, such as "b" for "d" or "bog" for "dog". The basic skills necessary for academic success may be

weak and inadequate leading to difficulty in learning academic subjects. As children grow older, reading becomes the predominant mode for learning and any disruptions of this skill seriously affects their performance in the classroom.

The study of the reading process may be carried out by evaluating the semantic and syntactic language processes involved. Burke and Goodman (1972) have developed an inventory for evaluating children's oral reading skills called the Reading Miscue Inventory (RMI). As children read, they make a number of errors or miscues which may be analyzed in terms of nine types:

1. Dialectical influence. When readers alter the text in relation to their own dialect.

2. Intonation. When readers change stress, pitch, or pause from what is expected.

3. Graphic similarity. When readers substitute a word which is similar in written form.

4. Sound similarity. When readers substitute a word which is similar in oral form.

5. Grammatical function. When readers substitute a word which differs in grammatical function.

6. Correction. When readers realize they have erred and attempt to correct their miscue.

7. Grammatical acceptability. When readers' miscues alter the meaning of the syntax.

8. Semantic acceptability. When readers' miscues alter the meaning of the sentence.

9. Meaning change. When readers' miscues affect the meaning of the entire reading passage.

The RMI is designed to provide an individualized analysis of children's oral reading skills so that teachers can better plan an effective management approach to the reading process for each child. Standardized tests are usually based on silent reading and result in classifying children according to a reading level. This standardized index of reading ability does not permit the evaluation of the reading process since the process is not observed. Although standardized tests may evaluate some of the same processes as the RMI, they are not complete. With the RMI, it is possible to observe the entire linguistic process as it related to reading and children's deficiencies can be targeted from a primary language base.

Statement of Problem

Carrow-Woolfolk and Lynch (1983) have suggested that:

> Since learning disabilities are ordinarily characterized by reading problems, and if reading problems are in fact disorders of language, language disorders and learning disabilities may be the same behaviors. (p.309)

Therefore, it was the purpose of this study to investigate the oral reading and comprehension skills of language impaired and learning disabled children. Oral reading was evaluated with respect to total reading time, total number of errors and errors influenced by dialect, intonation, graphic similarity, sound similarity, grammatical function, correction, grammatical acceptability, semantic acceptability, and meaning change. Comprehension was measured by responses to questions directed at literal meaning and inferred meaning.

More specifically, the following questions were investigated:

1. Is there a significant difference in the total number of oral reading miscues generated by language impaired and learning disabled children?

2. Is there a significant difference in the total reading time for oral passages of language impaired and learning disabled children?

3. Is there a significant difference in oral reading miscues generated as a result of dialect, intonation, graphic similarity, sound similarity, grammatical function, correction, grammatical acceptability, semantic acceptability, and meaning change in language impaired and learning disabled children?

4. Is there a significant difference in the comprehension of questions directed at the literal meaning and inferred meaning of oral reading passages by language impaired and learning disabled children?

This study was one part of a more comprehensive investigation which also evaluated the short-term memory (Shoaf, 1983) and language ability (Moore, 1983) of language impaired and learning disabled children.

Delimitations

1. The study was confined to a language impaired and learning disabled group, with 14 subjects in each group. Subjects were matched on the basis of age (plus or minus ten points); and reading achievement (plus or minus six percentile points).

2. Subjects were selected from the first, second, third, and fourth grade populations in Davidson County, North Carolina and were receiving services for either a language impairment or a learning disability. Selection was accomplished according to the following criteria:

a. The subjects demonstrated normal intellectual functioning (85 or above) on the Slosson Intelligence Test for Children and Adults (SIT) (Slosson, 1978).

b. They were native speakers of English from monolingual homes who did not exhibit any gross peripheral defects of audition or vision.

c. They were judged to be language impaired on the basis of a depressed language quotient (85 or below) on the Test of Language Development (TOLD) (Newcomer & Hammill, 1977) and the clinical judgement of certified speech and language pathologists.

d. They were judged to be learning disabled by meeting requirements for placement as established by the Davidson County School System (see Appendix A).

Limitations

1. To the extent that subjects selected were not representative of the language impaired or learning disabled populations at large, results will not be generalizable beyond the sample investigated.

2. To the extent that knowledge of subject status affected the objectivity of the researcher's observations and judgements, or caused her to influence the children on the tasks, results might be biased in favor of one group or the other.

3. To the extent that the subjects were aware of their participation in a research study, results might not be generalizable beyond the experimentally accessible population.

Assumptions

The following assumptions were made in this study:

1. That the groups of language impaired and learning disabled children were matched on pertinent characteristics of age, intellectual ability, and reading achievement.

2. That other extraneous variables such as sex, socioeconomic status, and race were randomly distributed between the groups.

3. That the examiners, being practiced speech, language, and hearing clinicians, were qualified to administer, score, and interpret all testing procedures used in this study.

4. That the reading material used in this study was on an instructional reading level for the participating children. Instructional level is the level which requires some help from the teacher but is not frustrating to the child.

Hypotheses

The following hypotheses were developed in the null form and tested at the .05 level of significance.

Ho 1

There is no significant difference in the total number of errors made by language impaired and learning disabled children as measured by the RMI (Burke & Goodman, 1972).

Ho 2

There is no significant difference in the oral reading time of selected passages by language impaired and learning disabled children.

Ho 3

There is no significant difference in the number of reading miscues due to dialect in language impaired and learning disabled children.

Ho 4

There is no significant difference in the number of reading miscues due to intonation in language impaired and learning disabled children.

Ho 5

There is no significant difference in the number of reading miscues which are graphically similar in language impaired and learning disabled children.

Ho 5.1 There is no significant difference in the number of reading miscues which show a high degree of graphic similarity in language impaired and learning disabled children.

Ho 5.2 There is no significant difference in the number of reading miscues which show a partial degree of graphic similarity in language impaired and learning disabled children.

Ho 5.3 There is no significant difference in the number of reading miscues which show no degree of graphic similarity in language impaired and learning disabled children.

Ho 6

There is no significant difference in the number of reading miscues which are similar in sound in language impaired and learning disabled children.

Ho 6.1 There is no significant difference in the number of reading miscues which show a high degree of sound similarity in language impaired and learning disabled children.

Ho 6.2 There is no significant difference in the number of reading miscues which show a partial degree of sound similarity in language impaired and learning disabled children.

Ho 6.3 There is no significant difference in the number of reading miscues which show no degree of sound similarity in language impaired and learning disabled children.

Ho 7

There is no significant difference in the number of reading miscues due to grammatical function in language impaired and learning disabled children.

Ho 7.1 There is no significant difference in the number of reading miscues whose grammatical functions are identical in language impaired and learning disabled children.

Ho 7.2 There is no significant difference in the number of reading miscues whose grammatical functions are not related in language impaired and learning disabled children.

Ho 7.3 There is no significant difference in the number of reading miscues whose grammatical functions differ in language impaired and learning disabled children.

Ho 8

There is no significant difference in the number of reading miscues which are corrected in language impaired and learning disabled children.

Ho 8.1 There is no significant difference in the number of reading miscues which are corrected accurately in language impaired and learning disabled children.

Ho 8.2 There is no significant difference in the number of reading miscues which are partially corrected in language impaired and learning disabled children.

Ho 8.3 There is no significant difference in the number of reading miscues which are not corrected in language impaired and learning disabled children.

Ho 9

There is no significant difference in the number of reading miscues which are grammatically acceptable in language impaired and learning disabled children.

Ho 9.1 There is no significant difference in the number of reading miscues which show a high degree of grammatic acceptability in language impaired and learning disabled children.

Ho 9.2 There is no significant difference in the number of reading miscues which show a partial degree of grammatic acceptability in language impaired and learning disabled children.

Ho 9.3 There is no significant difference in the number of reading miscues which show no degree of grammatic acceptability in language impaired or learning disabled children.

Ho 10

There is no significant difference in the number of reading miscues which are semantically acceptable in language impaired and learning disabled children.

Ho 10.1 There is no significant difference in the number of reading miscues which show a high degree of semantic acceptability in language impaired and learning disabled children.

Ho 10.2 There is no significant difference in the number of reading miscues which show a partial degree of semantic acceptability in language impaired and learning disabled children.

Ho 10.3 There is no significant difference in the number of reading miscues which show no degree of semantic acceptability in language impaired and learning disabled children.

Ho 11

There is no significant difference in the number of reading miscues which affect meaning change in language impaired and learning disabled children.

Ho 11.1 There is no significant difference in the number of reading miscues which affect meaning change to a high degree in language impaired and learning disabled children.

Ho 11.2 There is no significant difference in the number of reading miscues which partially affect meaning change in language impaired and learning disabled children.

Ho 11.3 There is no significant difference in the number of reading miscues which do not affect meaning change in language impaired and learning disabled children.

Ho 12

There is no significant difference in the number of reading miscues which affect comprehension in language impaired and learning disabled children.

Ho 12.1 There is no significant difference in the number of reading miscues which do not alter comprehension in language impaired and learning disabled children.

Ho 12.2 There is no significant difference in the number of reading miscues which result in partial loss of comprehension in language impaired and learning disabled children.

Ho 12.3 There is no significant difference in the number of reading miscues which result in a loss of comprehension in language impaired and learning disabled children.

Ho 13

There is no significant difference in the number of reading miscues which demonstrate grammatical relationships in language impaired and learning disabled children.

Ho 13.1 There is no significant difference in the number of reading miscues which demonstrate strength in grammatical relationships in language impaired and learning disabled children.

Ho 13.2 There is no significant difference in the number of reading miscues which demonstrate a partial strength in grammatical relationships in language impaired and learning disabled children.

Ho 13.3 There is no significant difference in the number of reading miscues which demonstrate an overcorrection in grammatical relationships in language impaired and learning disabled children.

Ho 14

There is no significant difference in overall comprehension of orally read passages in language impaired and learning disabled children.

Ho 14.1 There is no significant difference in literal comprehension of orally read passages by language impaired and learning disabled children.

Ho 14.2 There is no significant difference in inferred comprehension of orally read passages by language impaired and learning disabled children.

Chapter 2

REVIEW OF RELATED LITERATURE

In this chapter, language as it relates to the reading process and how it is acquired, is discussed.

A Language Model

Language may be defined from a variety of viewpoints. According to Bangs (1968), language is:

> ...the act or acts which produce some kind of response between two or more persons. Languages are composed of a system of arbitrary signs that allow for communication through oral language, written language, sign language of the deaf, morse code, everyday gestures like beckoning and other such forms... (p.16)

Whitaker (1971) delineated the four modalities of language as speaking, listening, reading, and writing. Speaking and listening which are dependent on the auditory system for their evolution, constitute the primary linguistic system characteristic of all human languages. The secondary system of reading and writing is dependent on and derives from the primary system. This dependency is based primarily on the ability to understand the spoken word in graphic symbols. The acquisition of the graphic system is determined by the degree of proficiency in the primary system. Children use the primary system in learning to read. Although speaking and listening develop naturally in the young child without any formal instruction, reading and writing typically must be taught.

The Reading Process

"Reading", according to Goodman (1976) "is a psycholinguistic guessing game. A reader has to anticipate what will happen next" (p.20). Vanezky (Rees, 1974) defined reading as the translation of written symbols to form a language to which the reader can attach meaning.

When formal reading instruction begins, children have already acquired many oral language skills and they apply this knowledge to written prose. Ruddell (1976) noted five language skills important to the success of the beginning reader: (a) recognizing and producing novel sentences; (b) discriminating between grammatical and ungrammatical sentences; (c) using contextual and prosodic clues to discover the meaning of ambiguous sentences; (d) comprehending sentences with the same underlying meaning but different surface structures and different deep structures. "Oral and written forms of language are based on the same linguistic foundation . . . . The stages through which a spoken or written message must pass on the way to being comprehended are the same" (Carrow-Woolfolk & Lynch, 1983, p.311).

The primary purpose of both oral and graphic language is communication. Graphic language depends upon prior knowledge of the structural (syntactic) and word selection (semantic) rules of the native language. Children's proficiency in oral language will be reflected in their mastery or lack of mastery of reading and writing. When children's oral language skills are impaired, frequently their reading performance is similarly affected (Carrow-Woolfolk & Lynch, 1983). Carrow-Woolfolk and Lynch (1983) observed that "since learning dis-

abilities are ordinarily characterized by reading problems, and if reading problems are in fact disorders of language, language disorders and learning disabilities may be the same behaviors" (p.309).

This high degree of intercorrelation between language disorders and learning disabilities was supported by Rabinovitch (1968) who compared good and poor readers and found that poor readers exhibited expressive language difficulties including word finding problems, verbal concept formation difficulties, and problems with symbolic learning. Poor readers consistently performed below the level of average readers on measures of verbal intelligence, but were comparable on measures of nonverbal intelligence. On the basis of these results, Rabinovitch (1968) concluded that dyslexia and specific learning disability were highly interrelated.

A group of studies (Belmont & Birch, 1966; Huelsman, 1970; Lyle & Goyen, 1968), similar to Rabinovitch's (1968), compared the performance of dyslexic readers and average readers on the Wechsler Intelligence Scale for Children (WISC) (Wechsler, 1974). Results demonstrated significantly lower performance for dyslexic children on the verbal subtests of the WISC, but little if any difference on the performance subtests. Most significant was the fact that differences in the two groups of readers were not due to a cumulative reading disability as the children ranged from first to sixth grade.

Language-Based Reading

Readers employ knowledge of the various aspects of oral language in approaching the reading process. Semantic and syntactic language knowledge includes knowledge of word meaning and sentence structures

in varying contexts. For example, comprehension of the sentence "The boy kissed the girl" requires knowledge of the meaning of each morpheme in the sentence (boy, kiss, "ed", girl) and knowledge of the relationship between the morphemes ("the" modifies "boy" and "girl"; "the boy" is the actor and "the girl" is the object; "ed" modifies "kiss") (Menyuk, 1983). The position supporting a relationship between oral language abilities and reading has been strengthened by studies of differences in language processing of normal and reading disordered children.

Semantic deficiencies. Perfetti and Goldman (1976) conducted studies dealing with encoding linguistic information in working memory. They predicted that poor readers and good readers would be comparable in short-term recall on non-linguistic material, while poor readers were expected to have more difficulty with short-term memory for linguistic material. When tested on a digit task, there was no significant difference in the performance of good and poor readers. When probe words embedded in meaningful sentences were used, poor readers performed less adequately than good readers.

In a semantic study of primary school children, Goodman (1965) found that children were unable to decode words in isolation but were able to read the same words in running context. In a similar study, Waller (1976) found that poor readers were able to encode meanings in the sentence they read as well as good readers, but poor readers did not perform as well as good readers when they had to retain verbal details such as grammatical markers and specific word strings. These results implied that poor readers had no generalized memory deficiency

but had difficulty employing a verbal code to store information and probably relied more heavily on a visual code. These studies support the notion of verbal coding deficiencies in poor readers which can be observed in reading as well as in other cognitive tasks.

Vellutino (1977) reviewed studies which concluded that poor readers took longer to respond and made more errors when naming a variety of items. These studies suggested that poor readers could be characerized by a basic dysfunction in word retrieval. Similar studies cited by Vellutino (1977) concluded that poor readers had an inability to develop automatized decoding skills as indicated by their difficulty on rapid naming tasks and their slow response rate vocally. Other investigations (Vellutino, 1977) found that in rapid automatic naming tasks, poor readers were deficient in the ability to generate the names of common objects, colors, letters, words, and numerals presented visually. Ordinarily, these readers would have no difficulty in naming most of these items.

Earlier studies conducted by Vellutino, Stegar, and Kandel (1972) assessed the association of visual, auditory, and haptic stimuli presented in different combinations in verbal and nonverbal learning tasks for good and poor readers. While the results were comparable for good and poor readers on nonverbal learning tasks, poor readers showed reduced performance on visual-verbal learning tasks. The results of these studies suggested that poor readers were deficient in short-term and long-term memory for verbal material. These deficits appeared to be restricted, affecting recall for specific linguistic units rather than general meanings which were conveyed by words and sentences.

Poor readers demonstrated a specific disorder in semantic processing which could be manifested in a variety of linguistic deficiencies such as dysfunction in basic naming and labeling, word finding problems, and other expressive language difficulties.

Syntactic deficiencies. Vellutino (1977) also reviewed studies that linked syntactic deficiencies to an intrinsic association with poor reading achievement. Fry and Shulte (Vellutino, 1977) conducted parallel studies on second graders' expressive language abilities. Their results revealed that good readers were linguistically more sophisticated than poor readers. Good readers demonstrated larger speaking vocabularies and greater verbal fluency than poor readers. Good readers also demonstrated greater use of abstractions, greater tendency toward substantive rather than descriptive use of words, better organization and integration of verbal concepts, and more appropriate use of grammar and syntax (Vellutino, 1977).

Myklebust (1973) observed similar results suggesting that learning disabled children demonstrated deficiencies in comprehension, vocabulary, accuracy tasks, nonsense word tasks, syllabification, and oral reading. Batey and Sonneschien (1981) studied the word recognition skills of learning disabled children and noted that the reading difficulties demonstrated by learning disabled children were probably derived from problems of acquisition and retrieval from long-term memory storage.

Fry, Johnson, and Muehl (1970) studied the oral language of good and poor readers in second grade in response to stories about 20 pictured stimuli. Three major differences distinguished good and poor

readers. One involved fluency and the size of the speaking vocabulary. Good readers had larger speaking vocabularies and better verbal fluency than poor readers. The second involved the linguistic patterns used by readers. Poor readers were more likely to use subordination in the subject position with a greater use of the category of moveable expression (phrase or subordinate clause) of purpose, cause, or condition (e.g., "The mother didn't have anything because she wasn't hungry"). The third difference was the use of "existence" type sentences. Good readers were more likely to use sentences which started with "there" and were followed by a form of the verb "to be" (e.g., "There's a dog").

Fry, Johnson and Muehl (1970) suggested that language deficits could have an effect on the acquisition of word decoding skills as well as on reading comprehension and written expression. These language deficits limit the number and variety of verbal labels and "mediators" that are used in acquiring graphic symbols and sound relationships needed for learning to read. Since the children in this study were second graders, the results could not be the cumulative effect of a long-standing reading disorder.

Morphological usage was examined in good and poor readers by Wiig, Semel and Crouse (1973). They found that poor readers made significantly more errors than good readers and their errors were more idiosyncratic and less predictable. This deficiency was further studied in neurologically impaired four-year olds and results suggested this deficiency was a cause rather than a result of a reading dis-

order. Therefore, these studies strongly support the belief that syntactic deficiencies may be significant precursors of reading disabilty.

Vogel (1974) evaluated oral syntax in good and poor readers (dyslexic) at the second grade level. Nine measures were used with dyslexic readers scoring inferiorly on seven of the measures. Vogel's results suggested that knowledge of morphology and deficient reading are significantly related and may share a common base.

Vogel (1974) tested the oral syntactic abilities of good and poor male readers, aged seven- to eight-years-old. The results confirmed that reading disabled children were deficient in oral syntax. This supported previous studies which indicated immaturity in oral syntax accompanied but was not secondary to reading problems.

Lyle (1970) found that a history of language difficulties in poor readers correlated with measures of reversal tendencies in reading, spelling, and memory for designs, as well as with tests of verbal ability. The author concluded that poor readers may be characterized by a generalized lag in learning.

Phonological deficiencies. Two views on phonological deficiencies in reading problems have been offered. One view contends that poor readers are impaired in auditory discrimination of sounds which results in difficulty with the analysis of the internal structure of the printed word. Auditory discrimination problems are best characterized by an inability to distinguish minimally contrasted words such as "pin" and "pen".

Another more recent view of phonological deficiencies in poor readers holds that these children have not become fully aware of the

phonetic structure of spoken language (Mattingly, 1972; Liberman & Shankweiler, 1978). This difficulty with "phonemic segmentation" of spoken and written words leads to difficulty in the mapping of alphabetic symbols onto their sounds. There is a dysfunction in abstracting the word components necessary for establishing a higher-order relationship in code acquisition. Readers may be able to distinguish "pin" and "pen" but have difficulty with the redundant sounds in these words.

Liberman and Shankweiler (1978) investigated the possibility that poor readers have difficulty in phonetic coding of information in short-term memory. Initial testing revealed that poor readers demonstrated less accuracy than good readers on visual recognition of the same nonsense syllables presented repeatedly, however, good readers and poor readers did not differ on recognition of recurring designs and photographed faces. These differences in performance were attributed to difficulties in phonetically decoding the visually presented nonsense syllables. Similar studies revealed that poor readers had difficulty when using short-term memory for phonetically confusable and non-confusable (rhyming and non-rhyming) letter strings. The results of these studies suggested that poor readers may have difficulty in employing a phonetic code for storing information in short-term memory.

Evaluation of Reading

Reading, as a modality of language, must be evaluated in relation to the other processes of language through formal or informal means.

Formal evaluation. This type of evaluation takes the form of a standardized test which is easy for teachers to administer and score.

Standardized tests require little preparation, once familiarity is gained, and they quickly show strengths and weaknesses of readers.

Culyer (1970) noted a high incidence of incorrect placement from standardized tests, which predicted reading levels based on responses given to test stimuli. Reading levels obtained in this manner may place children in levels above their actual ability level, causing frustration, or below their ability level, causing understimulation. Neither is good for the child already experiencing difficulty with reading and demonstrating frustration, low motivation, or boredom.

Standardized tests such as the Woodcock Reading Mastery Tests (Woodcock, 1973), the Peabody Individual Achievement Test (Dunn & Markwardt, 1970), or the Wide Range Achievement Test (Jastak & Jastak, 1976) assess aspects of the reading process separately such as letter recognition, word attack skills, reading recognition, and reading comprehension. Assessment of this nature allows teachers to pinpoint specific areas of reading strength or weakness but reveals little about the disruption of language processes underlying both oral and graphic skills.

Informal evaluation. This type of evaluation is usually more time consuming for teachers and generally used only infrequently. The most common informal assessment tool is the Informal Reading Inventory (IRI). Culyer (1970) described the IRI as an individual device consisting of a series of graded reading paragraphs accompanied by comprehension questions. Culyer suggested that the strength of the IRI is its ability to individually select a reader's independent, instructional, and frustrational levels of reading; therefore, teachers can

assess words which cannot be pronounced, difficulties in comprehension, and the types of errors which present problems.

Informal reading tests include the Gray Oral Reading Test (Gray) (Gray & Robinson, 1967) and the Spache Diagnostic Reading Scales (DRS) (Spache, 1972). These informal inventories contain reading passages separated by difficulty, which are read orally by children who must answer comprehension questions provided for each passage. Reading is then analyzed by totalling the number of reading errors and the number of comprehension questions answered correctly. Normative information on these tests provides a grade equivalent for reading ability.

Expanding on the principle of informal assessment, the Reading Miscue Inventory (RMI) (Burke & Goodman, 1972) evaluates errors or miscues made while reading orally. Readers are presented with new and interesting material to read while being audio-recorded. Words which are unknown provide clues as to how readers solve their reading problems. Burke and Goodman (1972) stress the need for a strong oral language foundation for reading and therefore are primarily concerned with meaning. Each miscue alters the text but may or may not change the meaning of the text. Other areas analyzed are grammar and correction strategies. Analysis of miscues enables teachers to observe the reading process as it relates to the oral language process.

Summary

Speaking and listening constitute the primary linguistic system on which the secondary linguistic system of reading and writing are dependent. Before learning to read, oral language must be developed

semantically, syntactically, and phonologically. Semantically, poor readers have trouble encoding and decoding linguistic information. They require longer response times and make a greater number of reading errors. Reading impaired children demonstrate syntactic deficits which are manifested in smaller speaking vocabularies and reduced fluency. They also use fewer abstractions and evidence poorer organization and integration of verbal concepts than good readers. Phonological studies of poor readers support the notion of "phonemic segmentation" problems. Phonological problems arise from not mapping symbols onto sounds as opposed to not discriminating between similar sounds.

Methods of assessing reading ability can be formal or informal. Formal evaluation methods are usually standardized, norm-referenced tests. These tests are thought to be less accurate in determining reading levels than informal assessment methods. The most common informal assessment is the IRI which provides independent, instructional, and frustrational reading levels. The RMI (Burke & Goodman, 1972), another informal assessment tool, requires the analysis of errors or miscues made during oral reading. Miscues are deviations from the printed text which are analyzed in relation to the oral language process of the reader.

Chapter 3

DESIGN OF STUDY

In this chapter, the participants of the study are defined, the instruments are described, and the statistical methods for analysis of the data are explained.

Participants of the Study

The participants of the study were 14 language impaired and 14 learning disabled children who were matched on the basis of age (± 6 months), intellectual functioning (± 10 points) as measured by the Slosson Intelligence Scale for Children and Adults (SIT) (Slosson, 1978), and by reading achievement (± 6 percentile points). Subjects were selected from the first, second, third, and fourth grade populations in Davidson County, North Carolina. The Prescriptive Reading Inventory (PRI) of the North Carolina Annual Testing Program (CTB/McGraw-Hill, 1976) was administered to first, second, and third graders, and the California Achievement Test (CAT) (CTB/Mc-Graw-Hill, 1978) was administered to fourth graders. The PRI yields a predicted CAT percentile which was used for this study. All children were receiving special services for either LI or LD at the time of this study. No child was receiving services for both disabilities. Prior to participation in the study, the hearing acuity of all children was screened during routine audiometric testing at 20 dB for the frequencies 1000 Hz, 2000 Hz, 4000 Hz, and 6000 Hz and at 25 dB for 500 Hz.

All parents were notified of the intent to use their children in this study and signed permission (Appendices B and C) was obtained.

Language Impaired Group (LI)

The definition of language impairment by Weiner (1974) was adopted for the purpose of this study. According to Weiner (1974), language impairment includes:

> A group of conditions characterized by the late appearance or slow development of language in children who do not have sensory motor, emotional, or general intellectual deficits that might be considered basic to their difficulties. (p.202)

Although children considered for the LI group were receiving language therapy, they were administered the Test of Language Development (TOLD) (Newcomer & Hammill, 1977) by clinicians from their respective schools to confirm a language deficit. The TOLD was selected because it is a comprehensive screening test of both receptive and expressive language skills in semantics and syntax and it yields an overall language quotient. A language quotient of 85 or below was achieved by all children selected for the study.

The TOLD was standardized on an unselected sample of 1014 children in 15 states. Concurrent validity of the TOLD was established by correlation coefficients of .63, .72, .73 at four-, six- and eight-year-old intervals. The TOLD correlated highly with the Auditory Discrimination Test (Wepman, 1958), Templin-Darley Test of Articulation (Templin & Darley, 1960), Peabody Picture Vocabulary Test (Dunn, 1965), the vocabulary subtests of the WISC (Wechsler, 1974), the Northwestern Syntax Screening Test (Lee, 1970), the Grammatic closure subtest of the Illinois Test of Psycholinguistic Ability (Kirk, McCarthy & Kirk,

1968), the Auditory Attention for Related Syllables subtest of the Detroit Test of Learning Aptitude (Baker & Leland, 1959), and the Test of Auditory Comprehension of Language (Carrow, 1973). Coefficients of reliability were found to be greater than .80 at most age levels.

An IQ of 85 or better was achieved by all children as measured by the Slosson Intelligence Test for Children and Adults (SIT) (Slosson, 1978). The SIT is an individually administered screening device which measures mental ability in approximately 2 to 15 minutes. Concurrent validity of the SIT was established by high correlation (r=.97) with the Stanford-Binet Intelligence Scale (Terman & Merrill, 1960). A test-retest reliability coefficient of .97 was obtained for the SIT when readministered within a period of two months to 139 individuals aged four- to fifty-years-old. Independent testing of another 111 subjects revealed a test-retest coefficient of correlation of .92 for ages four- through nineteen-years. For a description of pertinent subject characteristics, see Table 1.

Learning Disabled Group (LD)

The North Carolina Department of Instruction (1981) defines the LD student as:

> A pupil who has a severe discrepancy between ability and achievement and has been determined by a multidisciplinary team not achieving commensurate with his/her age and ability levels. The lack of achievement is found when the pupil is provided with learning experiences appropriate for his/her age and ability levels in one or more of the following areas: oral expression, listening comprehension, written expression, spelling, basic reading skill, reading comprehension, mathematical calculation, or mathematical reasoning. The team does not include pupils whose severe discrepancy between ability and achievement is primarily the result of a visual, hearing,

Table 1

Pertinent Characteristics

of the Language Impaired Group

Subject Number	Age in Months	Sex	SIT	TOLD	Reading Achievement Percentile
1	99	Male	105	79	38
2	112	Male	88	79	03
3	104	Male	98	83	12
4	91	Male	104	63	29
5	94	Male	87	78	15
6	99	Male	91	82	25
7	109	Male	97	81	24
8	113	Female	87	82	01
9	106	Male	90	72	36
10	98	Female	92	83	23
11	124	Male	89	80	34
12	124	Male	85	85	26
13	109	Male	101	82	05
14	94	Male	88	67	10
RANGE	91-124		85-105	63-85	1-38
MEAN	105		93	78	21

SIT - Slosson Intelligence Test for Children and Adults
TOLD - Test of Language Development
Reading Achievement Percentile - Prescriptive Reading Inventory

> or motor handicap, mental retardation, emotional disturbance, or environmental, cultural, or economic disadvantage. (p.3)

Children were placed in the LD group following requirements for placement into a learning disabilities program as established by the Davidson County School System (see Appendix A). These children were currently enrolled and being served in the program within their respective schools. For a description of pertinent subject characteristics, see Table 2.

Instruments

The testing was completed by eight speech and language pathologists from the children's respective schools. Each speech and language pathologist was trained individually to administer the reading protocols by the researcher.

For the purpose of this study, the Gray Oral Reading Test (Gray) (Gray & Robinson, 1967) was administered to determine a predicted reading level for each child. The passages on the Gray were designed to measure growth in oral reading from first grade to college and to aid in diagnosis of oral reading difficulties. The passages conform to classroom reading materials for the respective grades.

The Gray was standardized on five males and five females within a grade. The subjects were randomly selected from school districts in Florida and metropolitan and urban districts of Chicago. Concurrent validity was obtained by correlating scores from several reading passages to distinguish one grade level from another. Alternate form reliability was obtained by correlating scores from each of four equivalent forms of the test at each grade level. For all subjects, reliability coefficients of equivalence ranged from .97 to .98.

Table 2

Pertinent Characteristics

of the Learning Disabled Group

Subject Number	Age in Months	Sex	SIT	Reading Achievement Percentile
15	104	Male	104	35
16	118	Male	90	01
17	109	Male	99	11
18	93	Male	113	26
19	96	Male	97	11
20	104	Male	88	26
21	106	Male	101	26
22	113	Male	88	01
23	110	Male	92	34*
24	98	Male	89	29
25	127	Female	89	39*
26	124	Male	87	23
27	113	Male	96	04
28	92	Female	96	06
RANGE	92-127		87-113	1-39
MEAN	108		95	19

SIT - Slosson Intelligence Test for Children and Adults
Reading Achievement Percentile - Prescriptive Reading Inventory

*Reading Achievement Percentile - California Achievement Test

As the children read the passages, errors were recorded yielding a raw score. Any deviation from the written text constituted an error. Errors were commonly classified as substitutions, omissions, additions, repetitions, mispronunciations, or aided words. The children stopped reading when they had made seven or more errors on two consecutive passages. The scores obtained on the passages yielded a grade equivalent which was used to determine a predicted reading level, as obtained on the Gray, and differed from the actual reading level (Tables 3 and 4) possibly because of the small numbers used to standardize the Gray or the areas in which it was tested.

The Reading Miscue Inventory (RMI) (Burke & Goodman, 1972) was designed to enable teachers to analyze strengths and weaknesses in oral reading ability. Results from the inventory allow teachers to understand the language of the reader and how the reader approaches reading material.

Information is gathered by having the children read a passage while audio-taping it. Miscues or errors are marked from the taped passage and then coded using the RMI framework. A reader profile is compiled from the coded miscues and a reading program is established.

The RMI was modified for the purpose of this study by using controlled reading passages from the Diagnostic Reading Scales (DRS) (Spache, 1972). These passages are graded and followed by literal and inferred comprehension questions. Procedures for recording the passage were reviewed individually with each speech and language pathologist. Passages were read by the children at the grade level predicted by the Gray and were audio-taped. Miscues were then

Table 3

Reading Levels of

the Language Impaired Group

Subjects	Predicted Reading Level	Actual Reading Level	Grade Level
1	1.9	3.8	2.7
2	1.0	2.3	2.7
3	1.5	2.3	3.7
4	1.0	1.6	1.7
5	2.0	2.8	2.7
6	1.0	1.6	2.7
7	1.0	2.8	2.7
8	4.4	3.8	2.7
9	2.4	3.3	3.7
10	7.5	4.5	2.7
11	2.6	4.5	3.7
12	1.7	2.8	3.7
13	1.0	1.6	2.7
14	1.0	1.6	1.7
RANGE	1.0 - 7.5	1.6 - 4.5	1.7 - 3.7
MEAN	2.1	2.8	2.8

Table 4

Reading Levels of

the Learning Disabled Group

Subjects	Predicted Reading Level	Actual Reading Level	Grade Level
15	1.2	1.6	3.7
16	1.3	2.8	3.7
17	1.9	2.3	3.7
18	1.0	1.6	1.7
19	1.0	1.6	2.7
20	2.5	3.8	2.7
21	1.3	4.5	2.7
22	4.0	4.5	2.7
23	1.0	2.3	2.7
24	2.1	4.5	4.7
25	1.0	2.3	2.7
26	1.0	1.6	3.7
27	1.0	2.3	2.7
28	2.1	3.3	1.7
RANGE	1.0 - 4.0	1.6 - 4.5	1.7 - 4.7
MEAN	1.6	2.7	3.1

recorded and coded by the researcher according to nine RMI categories. The RMI categories include dialect, intonation, graphic similarity, sound similarity, grammatical function, correction, grammatical acceptability, semantic acceptability, and meaning change.

Dialect. Miscues are coded when the text is altered to fit the language usage of the reader. Coding of dialect is influenced by teachers and their familiarity with the reader's oral language usage. An example of a dialectical error would be the substitution of "pitchur" for "picture", "goed" for "went", or "don't" for "doesn't".

Intonation. This category is coded when there is a change in pitch, stress, or pause from what is expected. Intonation miscues provide clues to the reader's processing of language units. These are coded when they present a change in grammatical structure or meaning of the passage. An example of this would be saying "pro ject'" for "pro' ject", or pausing at the wrong time to leave an incomplete structure as in "The boy ... went for a ride".

Graphic similarity. Physical characteristics of the words are analyzed by dividing the responses into three parts (beginning, middle, end) and judging them for graphic similarity. When two parts of a word are graphically similar, a high degree (Y) of graphic similarity is coded; when one part of a word is graphically similar, partial degree (P) of graphic similarity is coded; and no similarity is coded no degree (N). An example of Y would be "walk" for "walked"; an example of P would be "chop" for "carry"; and an example of N would be "that" for "a".

Sound similarity. In this category, miscues are analyzed relative to the similarity of sounds associated with letters and letter combinations. Similarity of two parts of a word is coded high degree (Y); similarity of one part of a word is coded partial degree (P); and no similarity is coded no degree (N). An example of Y would be "Clarbul" for "Claribel"; an example of P would be "our" for "your"; and an example of N would be "one" for "member".

Grammatical function. This category is coded on the basis of how the miscue fits grammatically into a sentence. Miscues serving the same grammatical functions as the text are coded Y; those serving different grammatical functions are coded N; and miscues which cannot be assigned a grammatical function are coded P. An example of Y would be "She brushed Mary's head", instead of "She brushed Mary's hand"; an example of N would be "The tree is going" instead of "The tree is green"; and an example of P would be substituting a nonsense word for a real word.

Correction. In this category, coding occurs when attempts are made at correcting a miscue. Corrections of a miscue are marked Y; attempts yielding an unsuccessful correction are marked P; and miscues for which no correction is attempted are marked N.

Grammatical acceptability. Words which are substituted can still be grammatically correct, even though they are nonsense words. Teachers are instructed to ask, "Could the reader produce a totally acceptable sentence from this structure?" (Burke & Goodman, 1972). Sentences are read exactly as the reader read them. Those which are totally acceptable are marked Y. Those which contain miscues that do not fit

the whole test but are acceptable for a sentence portion before or after the miscue are marked P. No acceptability is marked N.

Semantic acceptability. Much like grammatical acceptability, this category focuses on whether the reader produces an understandable structure. This category is never coded higher than grammatical acceptability because of its dependency on it. Coded the same as grammatical acceptability, Y is marked for a totally acceptable structure; P is marked when the structure is acceptable for a sentence portion before or after the miscue; N is marked for an unacceptable structure.

Meaning change. This category focuses on whether the intended meaning of the text was understood. Teachers are instructed to ask "Does this miscue change the meaning of the sentence?" (Burke & Goodman, 1972). Extensive change in meaning is marked Y; minimal change is marked P; and no change in meaning is marked N.

Grammatical relationships. The categories of correction, grammatical acceptability, and semantic acceptability are used to assess the grammatical relationship of miscues to target words. The evaluation of grammatical relationships gives insight into the concern the reader demonstrates toward how oral reading relates to language.

There are 18 possible patterns produced which are categorized according to the degree of the reader's strength in using grammatical and meaning cueing systems. There are coded "strength", "partial strength", "weakness", or "overcorrection".

Comprehension patterns. The categories of correction, semantic acceptability, and meaning change are combined to determine whether

there has been a meaning loss. The interrelationship of these categories produces 27 possible patterns which determines whether the miscue resulted in "no loss of comprehension", "partial loss of comprehension", or "loss of comprehension".

The RMI also evaluates comprehension. Comprehension questions are divided into two types, literal and inferred. The responses to these questions were scored as correct or incorrect and totalled by category. Literal meaning refers to information which is stated directly in the reading passage. Inferred meaning refers to information which is not stated directly in the passage, but rather suggested. An example of these two types of comprehension questions follows this passage (Spache, 1972, p.7):

> Mary was on her way to school.
> She came to the corner.
> She saw a red light.
> Then she saw the green light.
> Then she went on to school.

A literal question about this passage would be: "What was the girl's name?". An inferred question would be: "What did she do when she got to the corner?".

Data Analysis

To examine performance in the use of reading miscues of the language impaired and the learning disabled group, data were subjected to 34 individual two-tailed t-tests by miscue type. The .05 level of significance was used as a standard for rejecting the null hypotheses.

Summary

A total of 28 children, 14 language impaired and 14 learning disabled, were subjects of this study. The language impaired children

were matched with the learning disabled children on the basis of age, IQ, and reading achievement. Each child's reading level was predicted by using the Gray Oral Reading Test (Gray & Robinson, 1967) but actual reading levels were obtained from the Diagnostic Reading Scales (Spache, 1972). As children read selected passages, their errors were analyzed following the Reading Miscue Inventory (Burke & Goodman, 1972) to determine if there were any significant differences in the oral reading abilities of the two groups.

Chapter 4

RESULTS AND ANALYSIS

In this chapter, the results of the study are discussed and an analysis of the variables is reviewed.

Results

The individual raw scores, ranges, means, and standard deviations for performance on the Reading Miscue Inventory (RMI) (Burke & Goodman, 1972) are reported in Table 5 for the language impaired (LI) and Table 6 for the learning disabled (LD) group.

As is shown in Tables 5 and 6, the individual raw scores for the total errors for the LI group ranged from 4 to 14 with a mean of 8.36 and a standard deviation of 3.27. The individual raw scores for the total errors for the LD group ranged from 4 to 13 with a mean of 7.64 and a standard deviation of 2.50. The individual raw scores for reading time ranged from 59 to 151 seconds with a mean of 104.31 and a standard deviation of 30.54 for the LI group. The individual raw scores for reading time for the LD group ranged from 31 to 210 seconds with a mean of 114.86 and a standard deviation of 49.96.

Individual error scores for dialect errors in the LI group ranged from 0 to 1 with a mean of .07 and a standard deviation of .27. The LD groups dialect errors ranged from 0 to 2 with a mean of .28 and a standard deviation of .61. Intonation error scores for the LI group ranged from 0 to 6 with a mean of 1.36 and a standard deviation

Table 5

Performance on the Reading Miscue Inventory for

the Language Impaired Group

Subject Number		1	2	3	4	5	6	7	8	9	10	11	12	13	14	Range	Mean	Standard Deviation
Total Errors		11	4	4	10	13	6	12	4	8	7	8	14	9	6	4-14	8.36	3.27
Time in Seconds		130	102	59	67	151	70	96	68	99	72	146	107	144	104	59-151	104.31	30.54
Dialect		0	0	1	0	0	0	0	1	0	0	0	0	0	0	0-1	.07	.27
Intonation		0	0	1	0	4	0	1	0	0	4	2	6	0	0	0-6	1.36	1.95
Graphic Similarity	Y	6	4	3	1	5	0	5	0	5	0	3	5	0	3	0-6	2.86	2.25
	P	1	0	0	1	1	2	1	1	2	1	0	0	2	3	0-3	1.07	.91
	N	2	0	0	1	1	1	3	1	0	0	2	0	2	0	0-3	.93	1.00
Sound Similarity	Y	3	0	3	0	4	0	2	0	5	0	0	2	0	1	0-5	1.43	1.74
	P	2	3	0	1	2	0	2	0	1	0	3	2	0	1	0-3	1.21	1.12
	N	4	1	0	2	1	3	5	2	1	1	2	1	4	4	0-5	2.21	1.53
Grammatic Function	Y	6	2	3	3	3	3	3	0	3	0	2	2	1	5	0-6	2.57	1.65
	P	0	0	0	0	1	0	0	0	2	0	1	2	0	0	0-2	.43	.76
	N	3	2	0	0	3	0	6	2	2	1	2	1	3	1	0-6	1.86	1.61
Correction	Y	4	0	0	1	0	0	5	2	0	0	1	0	2	1	0-5	1.14	1.61
	P	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0-1	.07	.27
	N	7	4	4	9	13	6	6	2	8	7	7	14	7	5	2-14	7.07	3.27
Grammatical Acceptability	Y	6	2	3	0	2	3	4	1	3	3	4	6	3	4	0-6	3.14	1.66
	P	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0-1	.14	.36
	N	5	2	1	10	10	3	8	3	5	4	4	8	6	1	1-10	5.00	3.04
Semantic Acceptability	Y	2	1	2	0	0	1	2	1	2	1	2	6	2	3	0-6	1.78	1.48
	P	0	0	0	0	2	0	1	0	1	2	1	0	1	1	0-2	.64	.74
	N	9	3	2	10	11	5	9	3	5	4	5	8	6	2	2-11	5.86	3.03
Meaning Change	Y	8	4	1	10	10	6	9	3	3	6	6	7	7	6	1-10	6.14	2.68
	P	3	0	0	0	3	0	3	0	5	0	2	7	0	0	0-7	1.64	2.27
	N	0	0	3	0	0	0	0	1	0	1	0	0	2	0	0-3	.50	.94
Comprehension	L	5	3	1	9	13	5	8	2	5	6	5	8	6	2	1-13	5.57	3.20
	PL	2	1	0	0	0	1	0	0	3	0	2	6	0	3	0-6	1.28	1.77
	NL	4	0	3	1	0	0	4	2	0	1	1	0	3	1	0-4	1.43	1.51
Grammatic Relationships	S	6	1	2	1	0	1	3	1	2	1	1	6	2	4	1-6	2.21	1.89
	PS	3	1	1	0	2	2	2	0	1	2	2	0	1	1	0-3	1.28	.91
	W	2	2	1	9	11	3	5	2	5	4	4	8	5	1	1-11	4.43	3.06
	O	0	0	0	0	0	0	2	1	0	0	1	0	1	0	0-2	.36	.63
Questions	Li	5	5	5	2	5	2	5	5	3	2	3	6	3	4	2-5	3.93	1.38
	I	0	2	2	0	1	1	1	1	2	1	1	0	0	1	0-2	.93	.73

Y - high degree; P - partial degree; N - no degree; L - loss; PL - partial loss; NL - no loss; S - strength; PS - partial strength; W - weakness; O - overcorrection; Li - literal questions; I - inferred questions

Table 6

Performance on the Reading Miscue Inventory for the Learning Disabled Group

Subject Number		15	16	17	18	19	20	21	22	23	24	25	26	27	28	Range	Mean	Standard Deviation
Total Errors		4	6	7	7	13	9	8	9	8	5	6	7	6	12	4-13	7.64	2.50
Time in Seconds		130	157	122	60	91	114	210	66	164	88	120	90	111	184	31-210	114.86	49.96
Dialect		0	0	1	0	0	0	0	0	0	0	0	0	2	1	0-2	.28	.61
Intonation		0	0	0	0	2	1	1	0	0	0	0	0	0	0	0-2	.28	.61
Graphic Similarity	Y	1	2	5	2	0	3	5	3	4	3	2	3	2	8	0-8	3.07	1.98
	P	0	0	2	3	6	1	0	1	2	0	1	1	1	2	0-6	1.43	1.60
	N	1	0	0	1	3	1	1	4	2	0	1	1	2	0	0-4	1.21	1.19
Sound Similarity	Y	0	0	3	1	0	1	1	2	2	3	1	2	2	5	0-5	1.64	1.39
	P	1	1	2	2	1	2	3	1	3	0	1	2	0	2	0-3	1.50	.94
	N	1	1	2	3	8	2	2	5	4	0	2	1	3	3	0-8	2.64	2.02
Grammatic Function	Y	2	0	6	3	7	2	5	6	4	2	3	3	2	8	0-8	3.78	2.29
	P	0	1	0	1	0	1	0	1	2	0	0	0	0	0	0-2	.43	.65
	N	0	1	1	2	2	2	1	1	2	1	1	2	3	2	0-3	1.50	.76
Correction	Y	0	0	4	1	0	0	1	0	2	0	4	0	0	0	0-4	.86	1.46
	P	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0-2	.21	.58
	N	4	6	3	6	12	9	7	9	6	5	0	7	6	12	0-12	6.57	3.25
Grammatical Acceptability	Y	4	3	3	4	5	1	5	7	3	3	4	2	4	8	1-8	4.00	1.84
	P	0	0	2	0	0	0	1	0	0	0	0	0	0	1	0-2	.28	.61
	N	0	3	2	3	8	8	2	2	5	2	2	5	2	3	0-8	3.36	2.34
Semantic Acceptability	Y	3	1	2	2	3	0	3	7	3	3	3	2	0	6	0-7	2.71	1.94
	P	0	1	2	1	0	0	0	0	0	0	1	0	2	0	0-2	.50	.76
	N	1	4	3	4	10	9	5	2	5	2	2	5	4	6	1-10	4.43	2.59
Meaning Change	Y	2	5	6	6	12	9	6	5	4	3	5	2	3	4	2-12	5.14	2.71
	P	0	1	0	0	1	0	0	4	0	0	0	2	1	0	0-4	.64	1.15
	N	2	0	1	1	0	0	2	0	4	2	1	3	2	8	0-8	1.86	2.14
Comprehension	L	1	4	1	5	9	9	4	2	3	2	1	4	3	3	1-9	3.64	2.59
	PL	1	2	1	0	4	0	1	7	0	1	1	0	1	1	0-7	1.43	1.91
	NL	2	0	5	2	0	0	3	0	5	2	4	3	2	8	0-8	2.57	2.34
Grammatic Relationships	S	3	1	4	1	3	0	4	7	3	3	2	2	0	6	0-7	2.78	2.04
	PS	1	2	1	2	2	0	1	0	2	0	0	0	4	2	0-4	1.21	1.19
	W	0	3	1	3	8	9	3	2	3	2	1	5	2	4	0-9	3.28	2.55
	O	0	0	1	1	0	0	0	0	0	0	3	0	0	0	0-3	.36	.84
Questions	LI	2	5	4	3	1	5	5	7	5	6	5	3	5	4	1-7	4.28	1.59
	I	3	0	2	1	0	0	1	1	2	1	2	1	2	3	0-3	1.36	1.01

Y - high degree; P - partial degree; N - no degree; L - loss; PL - partial loss; NL - no loss; S - strength; PS - partial strength; W - weakness; O - overcorrection; LI - literal questions; I - inferred questions

of 1.95. Intonation error scores for the LD group ranged from 0 to 2 with a mean of .28 and a standard deviation of .61. Individual error scores for the LI group for graphic similarity ranged from 0 to 6 for a high degree, 0 to 3 for a partial degree and no degree of similarity with means of 2.86, 1.07, and .93 and standard deviations of 2.25, .91, and 1.00, respectively. Individual error scores for the LD group for graphic similarity ranged from 0 to 8 for a high degree, 0 to 6 for a partial degree, and 0 to 4 for no degree of similarity with means of 3.07, 1.43, and 1.21 and standard deviations of 1.98, 1.60, and 1.19, respectively. Sound similarity error scores for the LI group ranged from 0 to 5 for a high degree, 0 to 3 for a partial degree, and 0 to 5 for no degree of similarity with means of 1.43, 1.21, and 2.21 and standard deviations of 1.74, 1.12, and 1.53, respectively. Sound similarity error scores for the LD group ranged from 0 to 5 for a high degree, 0 to 3 for a partial degree, and 0 to 8 for no degree of similarity with means of 1.64, 1.50, and 2.64 and standard deviations of 1.39, .94, and 2.02, respectively. Grammatic function error scores for the LI group ranged from 0 to 6 for a high degree, 0 to 2 for a partial degree, and 0 to 6 for no degree of grammatic function with means of 2.57, .43, and 1.86 and standard deviations of 1.65, .76, and 1.61, respectively. Grammatic function error scores for the LD group ranged from 0 to 8 for a high degree, 0 to 2 for a partial degree, and 0 to 3 for no degree of grammatic function with means of 3.78, .43, and 1.50 and standard deviations of 2.29, .65, and .76, respectively. Individual raw scores for correction in the LI group ranged from 0 to 5 for a high degree, 0 to

1 for a partial degree, and 2 to 14 for no degree of correction with means of 1.14, .07, and 7.07 and standard deviations of 1.61, .27, and 3.27, respectively. Individual raw scores for correction in the LD group ranged from 0 to 4 for a high degree, 0 to 2 for a partial degree, and 0 to 12 for no degree of correction with means of .86, .21, and 6.57 and standard deviations of 1.46, .58, and 3.25, respectively. Grammatic acceptability scores for the LI group ranged from 0 to 6 for a high degree, 0 to 1 for a partial degree, and 1 to 10 for no degree of acceptability with means of 3.14, .14, and 5.00 and standard deviations of 1.66, .36, and 3.04, respectively. Grammatic acceptability scores for the LD group ranged from 1 to 8 for a high degree, 0 to 2 for a partial degree, and 0 to 8 for no degree of acceptability with means of 4.0, .28, and 3.36 and standard deviations of 1.84, .61, and 2.34, respectively. Semantic acceptability scores for the LI group ranged from 0 to 6 for a high degree, 0 to 2 for a partial degree, and 2 to 11 for no degree of acceptability with means of 1.78, .64, and 5.86 and standard deviations of 1.48, .74, and 3.03, respectively. Semantic acceptability scores for the LD group ranged from 0 to 7 for a high degree, 0 to 2 for a partial degree, and 1 to 10 for no degree of acceptability with means of 2.71, .50, and 4.43 and standard deviations of 1.94, .76, and 2.59, respectively. Meaning change scores for the LI group ranged from 1 to 10 for a high degree, 0 to 7 for a partial degree, and 0 to 3 for no degree of meaning change with means of 6.14, 1.64, and .50 and standard deviations of 2.68, 2.27, and .94, respectively. Meaning change scores for the LD group ranged from 2 to 12 for a high

degree, 0 to 4 for a partial degree, and 0 to 8 for no degree of meaning change with means of 5.14, .64, and 1.86 and standard deviations of 2.71, 1.00, and 2.14, respectively. Comprehension error scores for the LI group ranged from 1 to 13 for a loss, 0 to 6 for a partial loss, and 0 to 4 for no loss of comprehension with means of 5.57, 1.28, and 1.43 and standard deviations of 3.20, 1.77, and 1.51, respectively. Comprehension error scores for the LD group ranged from 1 to 9 for a loss, 0 to 7 for a partial loss, and 0 to 8 for no loss of comprehension with means of 3.64, 1.43, and 2.57 and standard deviations of 2.59, 1.91, and 2.34, respectively. Grammatic relationship scores for the LI group ranged from 1 to 6 for strength, 0 to 3 for partial strength, 1 to 11 for weakness, and 0 to 2 for overcorrection of grammatic relationships with means of 2.21, 1.28, 4.43, and .36 and standard deviations of 1.89, .91, 3.06, and .63, respectively. Grammatic relationship scores for the LD group ranged from 0 to 7 for strength, 0 to 4 for partial strength, 0 to 9 for weakness, and 0 to 3 for overcorrection of grammatic relationships with means of 2.78, 1.21, 3.28, and .36 and standard deviations of 2.04, 1.10, 2.55, and .84, respectively.

Error scores for the LI group on literal comprehension questions ranged from 2 to 5 with a mean of 3.93 and a standard deviation of 1.38. Error scores for the LD group on literal comprehension questions ranged from 1 to 7 with a mean of 4.28 and a standard deviation of 1.59. Error scores for the LI group on inferred questions ranged from 0 to 2 with a mean of .93 and a standard deviation of .73. Error

scores for the LD group on inferred questions ranged from 0 to 3 with a mean of 1.36 and a standard deviation of 1.01.

Analysis

In order to test hypotheses 1 through 14, data were submitted to 34 individual two-tailed t-tests and the results are included in Table 7.

As is shown in Table 7, there was a significant difference between the LI and LD groups in the production of reading miscues with no meaning change ($t=2.17$, $p=.04$). The LD group made significantly more miscues which resulted in no meaning change than the LI group. On the basis of these results, Hypothesis 11 was rejected.

There was no significant difference between the LI and LD groups on any other variables, including total errors ($t=.65$, $p=.52$); total reading time ($t=.66$, $p=.52$); dialect ($t=1.20$, $p=.24$); intonation ($t=1.97$, $p=.06$); a high degree of graphic similarity ($t=.27$, $p=.79$); a partial degree of graphic similarity ($t=.72$, $p=.48$); no degree of graphic similarity ($t=.69$, $p=.50$); a high degree of sound similarity ($t=.36$, $p=.72$); a partial degree of sound similarity ($t=.73$, $p=.47$); no degree of sound similarity ($t=-.63$, $p=.53$); a high degree of grammatic function ($t=-1.61$, $p=.12$); a partial degree of grammatic function ($t=-.00$, $p=1.00$); no degree of grammatic function ($t=.75$, $p=.46$); a high degree of correction ($t=.49$, $p=.63$); a partial degree of correction ($t=-.84$, $p=.41$); no degree of correction ($t=.41$, $p=.69$); a high degree of grammatic acceptability ($t=1.30$, $p=.21$); a partial degree of grammatic acceptability ($t=-.75$, $p=.46$); no degree of grammatic acceptability ($t=1.60$, $p=.12$); a high degree of semantic

Table 7

Analysis of Performance on the Reading Miscue Inventory

by Language Impaired and Learning Disabled Children

Ho	Variables	Language impaired Mean	S.D.	Learning disabled Mean	S.D.	t value	Degrees of Freedom	Two-tailed Probability
Ho 1	Total errors	8.36	3.27	7.64	2.50	0.65	26	0.52
Ho 2	Time in seconds	104.31	30.54	114.86	49.96	-0.66	26	0.52
Ho 3	Dialect	0.07	0.27	0.28	0.61	-1.20	26	0.24
Ho 4	Intonation	1.36	1.95	0.28	0.61	1.97	26	0.06
Ho 5	Graphic similarity							
Ho 5.1	High degree	2.86	2.25	3.07	1.98	-0.27	26	0.79
Ho 5.2	Partial degree	1.07	0.92	1.43	1.60	-0.72	26	0.48
Ho 5.3	No degree	0.93	1.00	1.21	1.19	-0.69	26	0.50
Ho 6	Sound similarity							
Ho 6.1	High degree	1.43	1.74	1.64	1.39	-0.36	26	0.72
Ho 6.2	Partial degree	1.21	1.22	1.50	0.94	-0.73	26	0.47
Ho 6.3	No degree	2.21	1.53	2.64	2.02	-0.63	26	0.53
Ho 7	Grammatic function							
Ho 7.1	High degree	2.57	1.65	3.78	2.29	-1.61	26	0.12
Ho 7.2	Partial degree	0.43	0.76	0.43	0.65	0.00	26	1.00
Ho 7.3	No degree	1.86	1.61	1.50	0.76	0.75	26	0.46
Ho 8	Correction							
Ho 8.1	High degree	1.14	1.61	0.86	1.46	0.49	26	0.63
Ho 8.2	Partial degree	0.07	0.27	0.21	0.58	-0.84	26	0.41
Ho 8.3	No degree	7.07	3.27	6.57	3.25	0.41	26	0.69
Ho 9	Grammatic acceptability							
Ho 9.1	High degree	3.14	1.66	4.00	1.84	-1.30	26	0.21
Ho 9.2	Partial degree	0.14	0.36	0.28	0.61	-0.75	26	0.46
Ho 9.3	No degree	5.00	3.04	3.36	2.34	1.60	26	0.12
Ho 10	Semantic acceptability							
Ho 10.1	High degree	1.78	1.48	2.71	1.94	-1.43	26	0.17
Ho 10.2	Partial degree	0.64	0.74	0.50	0.76	0.50	26	0.62
Ho 10.3	No degree	5.86	3.03	4.43	2.59	1.34	26	0.19
Ho 11	Meaning change							
Ho 11.1	High degree	6.14	2.68	5.14	2.71	0.98	26	0.34
Ho 11.2	Partial degree	1.64	2.27	0.64	1.15	1.47	26	0.15
Ho 11.3	No degree	0.50	0.94	1.86	2.14	-2.17	26	0.04*
Ho 12	Comprehension							
Ho 12.1	Loss	5.57	3.20	3.64	2.59	1.75	26	0.09
Ho 12.2	Partial loss	1.28	1.77	1.43	1.91	-0.21	26	0.84
Ho 12.3	No loss	1.43	1.51	2.57	2.34	-1.54	26	0.14
Ho 13	Grammatic Relationships							
Ho 13.1	Strength	2.21	1.89	2.78	2.04	-0.77	26	0.45
Ho 13.2	Partial strength	1.28	0.91	1.21	1.19	0.18	26	0.86
Ho 13.3	Weakness	4.43	3.06	3.28	2.55	1.07	26	0.29
Ho 13.4	Overcorrection	0.36	0.63	0.36	0.84	0.00	26	1.00
Ho 14	Questions							
Ho 14.1	Literal	3.93	1.38	4.28	1.59	-0.63	26	0.53
Ho 14.2	Inferred	0.93	0.73	1.36	1.01	-1.29	26	0.21

* significant at or below the .05 level

acceptability (t=-1.43, p=.17); a high degree of semantic acceptability (t=.50, p=.62); no degree of semantic acceptability (t=1.34, p=.19); a high degree of meaning change (t=.98, p=.34); a partial degree of meaning change (t=1.47, p=.15); a loss of comprehension (t=1.75, p=.09); a partial loss of comprehension (t=-.21, p=.84); no loss of comprehension (t=-1.54, p=.14); strength in grammatic relationships (t=-.77, p=.45); a partial strength in grammatic relationships (t=.18, p=.86); a weakness in grammatic relationships (t=1.07, p=.29); an overcorrection in grammatic relationships (t=.00, p=1.00); literal questions (t=-.63, p=.53); inferred questions (t=-1.29, p=.21). On the basis of the data analysis, all hypotheses, with the exception of hypothesis 11, were not rejected.

In a post hoc analysis of eight variables--graphic similarity, sound similarity, grammatic function, correction, grammatic acceptability, semantic acceptability, meaning change, and comprehension--data were submitted to an analysis of variance for repeated measures to determine if there was a significant difference in performance at difference levels of these variables. For example, graphically similar miscues could be similar to a high degree, partial degree, or not at all. Of these eight variables, only three met the assumptions for the use of the repeated measures analysis including sound similarity, meaning change, and comprehension. All three achieved a two-tailed probability greater than the .05 level on the sphericity test applied to orthogonal components: sound similarity (p=.06), meaning change (p=.16), and comprehension (p=.38). The results of these analyses are shown in Tables 8 through 10.

Table 8

Summary of Analysis of Variance with Repeated Measures for Sound Similarity

	Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Two-tailed Probability
	Mean	264.29762	1	264.29762	124.13	0.0000
1	Group	2.01190	1	2.01190	0.94	0.3400
	Error	55.35714	26	2.12912		
	Sound	18.45238	2	9.22619	3.97	0.0248
2	Sound by group	0.16667	2	0.08333	0.04	0.9648
	Error	120.71429	52	2.32143		

Table 9

Summary of Analysis of Variance with Repeated Measures for Meaning Change

	Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Two-tailed Probability
	Mean	592.01190	1	592.01190	202.47	0.0000
1	Group	0.96429	1	0.96429	0.33	0.5707
	Error	76.02381	26	2.92399		
	Meaning change	375.02381	2	187.51190	36.24	0.0000
2	MC by group	25.92857	2	12.96429	2.51	0.0914
	Error	269.04762	52	5.17399		

Table 10

Summary of Analysis of Variance with Repeated Measures for Comprehension

	Source	Sum of Squares	Degrees of Freedom	Mean Square	F	Two-tailed Probability
	Mean	592.01190	1	592.01190	202.47	0.0000
1	Group	0.96429	1	0.96429	0.33	0.5707
	Error	76.02381	26	2.92399		
	Comprehension	165.88095	2	82.94048	12.92	0.0000
2	Comp. by group	34.35714	2	17.17857	2.68	0.0783
	Error	333.76190	52	6.41850		

According to Table 8, a summary of the analysis of variance with repeated measures revealed a significant difference between the levels of sound similarity (F=3.97, df=2, p=0.025) but no significant difference between the language impaired and learning disabled groups (F=0.94, df=1, p=0.34). In addition, there was no significant interaction between the groups and sound similarity (F=0.04, df=2, p=0.96).

As is shown in Table 9, a summary of the analysis of variance with repeated measures revealed a significant difference between the levels of meaning change (F=36.24, df=2, p=0.00) but no significant differences between the language impaired and learning disabled groups (F=0.33, df=1, p=0.57) and no significant interaction between the groups and meaning change (F=2.51, df=2, p=0.09).

As is shown in Table 10, a summary of the analysis of variance with repeated measures revealed a significant difference between the levels of comprehension (F=12.92, df=2, p=0.00). There was no significant difference between the language impaired and learning disabled groups (F=0.33, df=1, p=0.57) and no significant interactions between the groups and comprehension (F=2.68, df=2, p=0.07).

Chapter 5

SUMMARY, DISCUSSIONS, AND RECOMMENDATIONS

In this chapter, a summary, discussion, and recommendations for future research are presented.

Summary

The purpose of this study was to investigate the oral reading abilities and the comprehension skills of language impaired and learning disabled children. Oral reading was evaluated with respect to total number of errors, reading time, and errors influenced by dialect, intonation, graphic similarity, sound similarity, grammatic function, correction, grammatic acceptability, semantic acceptability, meaning change, comprehension, and grammatical relationships. Comprehension skills were evaluated in response to literal and inferred questions.

The study consisted of 28 children in the first, second, third, and fourth grades who were placed into two groups: a group of 14 language impaired children and a group of 14 learning disabled children. The children were identified by prior placement in a language impaired or learning disabled program. Further selection for both groups was based on performance ($\geq$ 85) on the Slosson Intelligence Test for Children and Adults (Slosson, 1978), and for the language impaired group, on their performance ($\leq$ 85) on the Test of Language Development (Newcomer & Hammill, 1977). The groups were matched on the basis of age ($\pm$ 6 months), IQ ($\pm$ 10 points), and reading achievement ($\pm$ 6 per-

centile points) as measured by the Prescriptive Reading Inventory of the North Carolina Testing Program (CTB/McGraw-Hill, 1976) or the California Achievement Test (CTB/McGraw-Hill, 1978).

Reading levels for each of the 28 children were established by administering the Gray Oral Reading Test (Gray & Robinson, 1967). The reading level obtained was used as a predicted reading level for the administration of the Diagnostic Reading Scales (Spache, 1972). As children read the passages on the Diagnostic Reading Scales, their errors were recorded and analyzed using the Reading Miscue Inventory (Burke & Goodman, 1972).

To test the hypotheses developed for this study, the data were submitted to 34 individual t-tests and tested at the .05 level of significance. Results revealed that there was significant difference between the two groups in the production of reading miscues with no meaning change, with the learning disabled children making significantly more errors of this type. All other variables revealed no significant difference between the groups. A post hoc analysis of variance for repeated measures revealed significant differences between levels of performance on three variables: sound similarity, meaning change, and comprehension. Although these variables evidenced significant differences between levels of performance, there was no significant difference in performance between the two groups or on the interaction between the levels and the two groups.

Discussion

The results of this study suggest that both groups performed with some difficulty on the reading task. With the exception of errors

resulting in no meaning change, the types of errors they made were similar, but they affected the reading passages in different ways. The errors made by learning disabled children were errors that did not change the meaning of the text, while errors made by language impaired children were more likely to change the meaning of the text. These changes in meaning may make it more difficult for the language impaired to understand what they read.

Post hoc analyses revealed differences in levels of performance on three variables. Both groups demonstrated more errors resulting in no sound similarity than in errors resulting in partial or full sound similarity. The errors made by both groups were more likely to bear no similarity in sound to the actual text.

In analyzing levels of meaning change, both groups made more errors resulting in meaning change as opposed to errors resulting in partial or no meaning change. However, as results of the t-tests revealed, learning disabled children made more errors resulting in no meaning change than language impaired children.

Analysis across levels for correction revealed that fewer attempts were made which partially corrected the original error than were made to either fully correct or not correct at all. It was interesting to note that children attempted to fully correct most errors or made no attempt to correct errors.

These results become revealing when the actual reading levels of the children are considered. Six of the language impaired children in this study were reading at a level that was greater than the expected reading level for their grade, while only one learning disabled

child read at a level greater than expected. During the preliminary testing, the language impaired children demonstrated .7 months improvement in reading from the predicted level of reading to the actual level tested. Learning disabled children showed 1.1 years improvement in reading from the predicted to the actual reading level. On the average, the actual reading level for language impaired children was on grade level (2.8) while the actual reading level (2.7) for learning disabled children was still .4 months behind the expected grade level. Even though the learning disabled children appear to be reading at levels below those of language impaired children, both tend to make the same kinds of errors during oral reading and both seem to be handicapped in the reading situation. As Carrow-Woolfolk and Lynch (1983) noted, both language impaired and learning disabled children exhibit language disabilities, either oral, graphic, or both and may, in fact, be demonstrating the same handicapping condition. The distinguishing factor between the two groups seems to be the type of assessment and intervention provided.

Language impaired children typically are assessed in the area of oral language skills while learning disabled children are assessed in terms of graphic language skills. Integration of disciplines in the assessment of these children would provide a more complete profile of their abilities and disabilities. Assessment of both groups should include a measure of oral language skills, graphic language skills, academic achievement, and intellectual ability. The resulting profile, then, could be used to establish appropriate remedial programs. All disciplines involved in the management of these children should be

pursuing common educational objectives that evolve out of the same underlying educational philosophy. There should be a single educational plan for these children which can be used by all persons working with them.

In another study of the language abilities of this same group of language-impaired and learning disabled children, Moore (1983) found no significant differences between the groups except on Production of Model Sentences and syntax. The learning disabled children achieved significantly better scores on the Production of Model Sentences and overall syntax. These results lend further support to the notion that these two clinical entities may represent the same handicapping condition.

In a third study, Shoaf (1983) evaluated the short-term memory skills of the language impaired and learning disabled children included in the present study. The results of Shoaf's investigation revealed that the learning disabled scored significantly better on four out of six short-term memory tasks, including: sequencing of digits, unrelated words, and related syllables and phonemic synthesis. No significant differences in performance were observed on the Token Test for Children (Disimoni, 1978) and the Processing Spoken Paragraphs subtest of the Clinical Evaluation of Language Functions (Semel & Wiig, 1982). While the oral and graphic language skills of these children appeared to be highly similar, the results of Shoaf's (1983) work indicated that underlying auditory processes may be a distinguishing characteristic of these two types of children. Language impaired children appeared to be more significantly impaired

in this area although their impairment did not seen to further reduce their oral and graphic language abilities.

Recommendations

As a result of this study, the following recommendations for further research are made:

1. This study should be replicated on a larger sample of subjects to corroborate the present findings.

2. Future studies should include a normal population in sampling.

3. Longer reading passages should be used to provide more opportunities for insight into the reading errors of children.

4. Comprehension questions should also evaluate knowledge of vocabulary to further assess the comprehension abilities of the reader.

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Appendix A

Formula for LD Placement

Appendix A

Formula for Placement in a LD Program

The following procedure is used to calculate expected grade level functioning based upon the results of an intelligence test:

(a) Obtain the intelligence test score (IQ).

(b) Obtain the student's chronological age (CA).

(c) Convert the CA to months (i.e. 8-9 = 105 months).

(d) Convert 5.5 to 66 months (5.5 - 5½ years).

(e) Substitute that information in the following formula:

$$\frac{IQ}{100} \text{ X (C.A. -5.5) = Expected Grade Achievement}$$

(f) Example: If the obtained IQ of 110 and the student's CA is 12-0:

$$\frac{110}{100} \text{ X (144-66) = Expected Grade Achievement}$$

$$\frac{110}{100} \text{ X (78) = Expected Grade Achievement}$$

1.1 X 78 = Expected Grade Achievement

85.8 months = Expected Grade Achievement

85.8 divided by 12 = 7 years 1.8 months

7.2 = Expected Grade Achievement

Determine the amount of discrepancy from the expected academic performance and current academic performance.

(a) Obtain current achievement test scores in any of the achievement areas under consideration.

(b) Subtract the Expected Grade Achievement Score from the Current Grade Achievement Score.

(c) Compare that difference score to the Degree of Severity Index.

(d) Define the pupil's achievement level as falling within the Mild, Moderate, or Severe level of discrepancy.

Appendix B

Letter of Intent

Appendix B

BOARD OF EDUCATION

April 6, 1983

Dear _____,

We are currently conducting a comparative study of Language Impaired and Learning Disabled children enrolled in the Davidson County School System. With your permission, we would like for your child, _____, to participate in this study.

Your child and others selected will be evaluated in language, short-term memory and reading by our Speech/Language Therapists. The results will enable us to:

- better understand the relationship between language and learning disabilities
- develop a more effective individualized educational plan (IEP) for your child
- plan more effective ways to utilize Speech/Language and LD personnel

Please indicate your willingness for your child to participate in this study by completing the attached form and returning it to me in the enclosed envelope by Friday, April 15, 1983. Call me if you have questions concerning this matter.

Thank you for your cooperation.

Cordially,

Kenneth C. Drum
Director of Programs
for Exceptional Children

Appendix C

Parental Permission

Appendix C

BOARD OF EDUCATION

DAVIDSON COUNTY

TO: Ken Drum
Director of Programs for
Exceptional Children

You have my permission to include my child, _____,
in the study regarding Language and Learning Disabled children. I understand that I can call Ken Drum at 704-249-8182 for additional information and that I can receive results of the testing and study by making a written request.

Signed _____

Date _____

VITA

Kim Schirrman Scarboro was born to Ronald and Carol Schirrman in Fort Ord, California in 1956. As a military dependent, she traveled overseas with her family during her early school years. She graduated from South View Senior High School in Hope Mills, North Carolina in 1974 and entered Appalachian State University in the Fall of the same year. She was a member of the Appalachian State University Rifle Team during her sophomore, junior, and senior years. During this time she met her husband, Ed, who is a Certified Public Accountant. They were married in July of 1978. After student teaching in Davidson County, she took a position as a speech/language pathologist at Fair Grove Elementary School in Thomasville, North Carolina. She began work on her master's degree during the summer of 1979 and attended Appalachian State University during the summer while continuing to work during the school year as a speech/language pathologist. Requirements for a Master of Arts degree in Speech Pathology and Audiology were completed in 1983.

She and her husband presently reside in Lexington, North Carolina.