A STUDY OF THE DIFFERENCES IN ORAL READING BEHAVIOR BETWEEN ABLE AND DISABLED READERS

By

MARGARET DRUMM HARRISON

Bachelor of Science in Education
Central State University
Edmond, Oklahoma
1972

Master of Science
Oklahoma State University
Stillwater, Oklahoma
1979

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
DOCTOR OF EDUCATION
December, 1981

A STUDY OF THE DIFFERENCES IN ORAL READING BEHAVIOR BETWEEN ABLE AND DISABLED READERS

Thesis Approved:

Darrel D Ray
Thesis Adviser

Kenneth H. McKinley

Kenneth St. Clair

Bernard E Belden

Kenneth L. King

Norman N Durham
Dean of the Graduate College

ACKNOWLEDGMENTS

The writer wishes to express special appreciation to Dr. Darrel D. Ray, Chairman of her Advisory Committee, under whose direction this study was conducted. Without his constant guidance and encouragement this dissertation would never have been completed. For their support and assistance, the writer also wishes to express appreciation to the other members of the Advisory Committee, Dr. Bernard Belden, Dr. Kenneth King, Dr. Kenneth McKinley, and Dr. Kenneth St. Clair.

Appreciation is extended to the principals and teachers of elementary schools in Stillwater, Oklahoma, for their cooperation and to the second, third, fourth and fifth grade students who willingly donated their time for testing.

Special thanks are extended to Dr. William R. Powell, University of Florida, for consultation on the grammatical aspects of the study; my colleague, Karen Connel, for her assistance throughout the study; and Debbie Miller for her dedication and cooperation in the typing of the manuscript.

My sincerest gratitude is expressed to my parents and other family members, without whose support and encouragement this undertaking would have been impossible.

To my sons, Mitchell and Jason, this study is affectionately dedicated.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

PRESENTATION OF THE PROBLEM

Introduction

For many years researchers have studied oral reading errors in an attempt to contribute to the diagnosis and subsequent remediation of reading difficulties. Although research has provided numerous systems for analyzing and interpreting oral reading errors, some including the linguistic aspects of the individual errors, few studies have provided data regarding the relationship between oral reading errors and the grammatical structure of our language.

There appears to be little doubt that analyzing oral reading errors can provide classroom teachers and clinicians with invaluable information for diagnostic purposes. Patterns emerge during this analysis which "produce a picture in depth of the reading process in the reader" (Goodman, 1965, p. 640). Knowledge of the nature of the reading process can "contribute to a substantive rationale for both basic and remedial instruction in reading" (Weber, 1968, p. 102).

Need for the Study

Although oral reading errors have been the subject of numerous analyses, few studies attempted to determine the

relationship between oral reading errors and parts of speech. Researchers have attempted to analyze oral reading errors from numerous perspectives. Analyses based on the assumption of inadequate word attack skills have been conducted (Monroe, 1932; Gates, 1962; Gilmore, 1950) and produced classifications of error types. Others (Christenson, 1966; Berends, 1971; Gonzales, 1974, 1978) have utilized an error classification system developed by Ray (1969) which synthesizes the sound-symbol approach of Monroe (1932) and the visual-perceptual approach of Gates (1962) with an emphasis on the cause of the error (i.e., structure, faulty sound/symbol associations, directional confusion). Still others have analyzed errors with an emphasis on the linguistic and grammatical aspects (Goodman, 1965, 1980; Clay, 1968; Biemiller, 1970, 1979).

Statement of the Problem

The purpose of this study is to examine the oral reading behavior of able and disabled readers whose instructional level is between 2.5 and 3.9, to determine if there is a relationship between part of speech of the textual stimulus in oral reading and error type of these two categories of readers. More specifically, this study will attempt to answer the following questions:

1. Is there a significant difference between the oral reading errors made by able and disabled readers in terms of reading error type and part of speech of the textual

stimulus at Level I (91-94 per cent word recognition)?

2. Is there a significant difference between the oral reading errors made by able and disabled readers in terms of reading error type and part of speech of the textual stimulus at Level II (less than 91 per cent word recognition)?

3. Is there a significant difference between error patterns of able and disabled readers?

Hypotheses

The first set of hypotheses address the first question above and will be tested at the 2.5, 3.0 and 3.5 reading levels. The hypotheses to be tested are stated in the null form as:

1. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and substitution errors are compared at Level I (91-94 per cent word recognition).

2. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and mispronunciation errors are compared at Level I (91-94 per cent word recognition).

3. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and words aided are compared at Level I (91-94 per cent word recognition).

4. There is no significant difference between the oral

reading performance of able and disabled readers when part of speech of the textual stimulus and omission errors are compared at Level I (91-94 per cent word recognition).

5. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and insertion errors are compared at Level I (91-94 per cent word recognition).

The second set of hypotheses, which deal with the second research question, will be tested at the 3.0, 3.5 and 4.0 reading levels.

6. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and substitution errors are compared at Level II (less than 91 per cent word recognition).

7. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and mispronunciation errors are compared at Level II (less than 91 per cent word recognition).

8. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and words aided are compared at Level II (less than 91 per cent word recognition).

9. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and insertion errors are

compared at Level II (less than 91 per cent word recognition).

10. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and omission errors are compared at Level II (less than 91 per cent word recognition).

All hypotheses will be tested at the .05 level of significance.

Definitions of Terms

Average or above intelligence is defined as a Full Scale IQ of 90 or above on the Wechsler Intelligence Scale for Children-Revised (Wechsler, 1974).

Disabled reader is a reader whose oral reading level is significantly below his expected level. Expected reading level will be determined by the Bond formula (ERL = IQ/100 x years in school + 1). A disabled reader is defined as one whose oral reading level is at least .75 of a year below his ERL.

Level I in this study indicates the reading level at which the reader's word recognition accuracy falls between 91 and 94 per cent with at least 60 per cent accuracy in comprehension or the lowest reading level at which a reader attains a word recognition score above 90 per cent with at least 60 per cent accuracy in comprehension on the Standard Reading Inventory (McCracken, 1966).

Level II in this study indicates the highest reading level at which the reader's word recognition accuracy falls below 91 per cent on the Standard Reading Inventory.

Word recognition errors in this study refer to the following error types:

a. Substitution - of an incorrect word for the textual stimulus.

b. Mispronunciation - of a word wholly or in part. This includes any mispronunciation of the textual stimulus other than the substitution of some other whole word.

c. Words Aided - by the examiner after a five-second hesitation on the part of the reader.

d. Insertion - of a whole word.

e. Omission - of a whole word.

Behavioral errors refer to repetitions, self-corrections, and disregard for punctuation. For the purposes of this study, these will not be counted as errors and these will not be analyzed.

Extended oral passage refers to a passage of at least 500 words read orally at sight. The extended oral passages used in this study were developed by Stuever (1969) and revised by this writer. An additional passage has been added to allow analysis at the 2.5 level. Readability levels of the Stories of Stuever (Revised) were established by use of the Spache formula (1973) and compare in difficulty with equivalent passages on the Standard Reading Inventory.

Parts of speech for the purposes of this study refer to the following categories: nouns, proper nouns, pronouns, verbs, adverbs, adjectives, prepositions, conjunctions, articles, and interjections. Infinitives will be categorized as prepositions and verbs to allow for consideration of each word individually.

Delimitations

Scope of the Study

This investigation will include an analysis of the oral reading errors made by able and disabled readers of average or above intelligence whose instructional reading level is between 2.5 and 2.9. Comparisons will be made between these two ypes of readers in terms of the relationship between word recognition error types (substitutions, mispronunciations, words aided, omissions and insertions) and part of speech of the textual stimulus (nouns, proper nouns, pronouns, verbs, adverbs, adjectives, prepositions, conjunctions, articles and interjections).

The subjects for this study were drawn from the clinic population at the Oklahoma State University Reading Clinic and second, third, fourth and fifth grade public school students in Stillwater, Oklahoma, and the surrounding area. The final sample consisted of 20 able and 20 disabled readers.

Limitations of the Study

This study is limited to disabled readers receiving

tutoring assistance at the Oklahoma State University Reading Clinic and second, third, fourth, and fifth grade public school students attending elementary schools in central Oklahoma.

The oral reading tests used in this study are only a sample of the measures which might have been used. Other tests might yield different results.

Assumptions

It is assumed that each word in a passage will afford to a given reader an opportunity to make any one of several types of errors and that the errors will be a random sample of reading behavior for an individual reader.

It is assumed that the classification of reading errors is valid and that the particular analysis system to be used in this study is appropriate for this purpose.

It is assumed that the uncontrolled variables are randomly assigned.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The literature related to oral reading errors and their relationship to the parts of speech is limited. There is, however, abundant literature related to the significance of various oral reading errors and some linguistic aspects of oral reading. This review will be organized into the follow ing sections: (1) analysis of word recognition errors of able and disabled readers; and (2) linguistic and grammatical aspects of word recognition errors.

Analysis of Word Recognition Errors

Analysis of word recognition errors in oral reading has been the topic of numerous research studies. This analysis is widely accepted as a basis for the diagnosis and subsequent remediation of reading difficulties.

A problem arises, however, in determining exactly what constitutes an "error" in oral reading. Interpreted literally, an oral reading error refers to any oral response which deviates from the visual stimulus. However, this literal interpretation is rarely applied. Even the term "error" has been questioned. Kenneth Goodman (1967)

proposed that "miscue" is a more appropriate term based on his linguistic analysis of children's errors in oral reading.

Because the number and variety of error classification systems is so varied, it is difficult to make comparisons between studies. It becomes obvious that due to the diversity between classification schemes "no serious comparison is feasible unless the original data are reclassified according to the same defining criteria" (Weber, 1968, p. 101).

In Swanson's taxonomy for adult readers substitutions, omissions and insertions may involve either a word, a syllable, or a letter (Swanson, 1937). Goodman (1967) includes self-corrections, substitutions, and mispronunciations all within his error category labeled substitutions.

Of the error types most commonly evaluated, it is generally agreed that mispronunciations, substitutions, and pronunciations (words pronounced by the examiner) should be counted as errors. Researchers seem to agree that substituting a different word from the stimulus consistently outnumbers other types of errors at all ages (Weber, 1968). Gilmore (1947, 1950) in studying the relationship between types of errors made on the Gilmore Oral Reading Test and the Stanford Reading Test concluded that substitutions were the most important type of error analyzed. He observed that substitutions were "related to poor comprehension and poor and slow reading" (Gilmore, 1947, p. 57).

There is general consensus that substitutions and

mispronunciations constitute the bulk of oral reading errors (Madden, 1941; Schale, 1964; Y. Goodman, 1967; Clay, 1968; D'Angelo, 1979; Graham, 1980). Madden and Pratt (1941) in their study of third through ninth graders found that 50 per cent of oral reading errors were mispronunciations. Substitutions were included in this category in their study. Clay (1968) in analyzing the errors of first graders found the level of substitution errors (including mispronunciations) to be approximately 73 per cent. In a study at the University of Maryland Reading Clinic, D'Angelo (1979) found an even higher incidence of substitution and mispronunciation errors, with 87 per cent of the errors at the instructional level falling into this category.

There is also general agreement that words pronounced by the examiner due to refusal on the part of the reader to attempt the word increase as the difficulty level of the material increases (Killgallon, 1942; Christenson, 1966; Berends, 1971; Bell, 1973). In the primary grades, poor readers tend to require more words pronounced by the examiner (refusals) than good readers of the same age (Schummers, 1956; McCracken, 1961; Stafford, 1967). In Schummers' sample, the poor reader sample had seven times as many refusal errors as the good readers. McCracken's second grade poor readers exhibited four times as many refusal errors as the good readers.

Cohen (1975, p. 110) in her study of 50 children during the last eight months of the first grade observed that poor

readers made an overwhelmingly greater proportion of No Response errors and that "from March to June No Response errors dropped to last place for Good Readers, but for Poor Readers it was still the single largest source of error" (Cohen, 1975). There is also evidence that more words are attempted by the reader by the time children reach the third grade (Schlieper, 1977).

Schale (1966) found repetitions and substitutions to be the most frequent errors, with repetitions decreasing as the difficulty of the material increased. This concurred with Christenson (1966) who also noted that the greatest number of repetitions occur at the independent level. Berends (1971) in analyzing the errors of disabled readers found similar patterns.

In analyzing the errors of first grade readers, Weber (1970) found that 26 per cent of their errors were self-corrected. Berends (1971) concurred with Schummers (1956) that correction errors decrease as the difficulty of the the material increases. The difficulty of comparing results between studies again becomes apparent when it is noted that in Goodman's miscue analysis scheme self-corrections are included under the category of substitution errors (Goodman, 1967).

Weber (1968, p. 110) concluded that none of the studies she investigated "consider the possibility that a repetition may be a form of a hesitation--a filled pause--or an act of confirmation rather than an error." In studying repetition

errors of readers in grades one through three, Goodman (1965) discovered that virtually all repetitions were made in order to correct a previous error such as a substitution.

Ekwall (1974) departs from the majority opinion regarding repetitions. His studies using a polygraph to determine when a reader has reached his frustration level, indicate that failure to count repetitions as errors forces a reader to become

> physiologically frustrated before the examiner is able to record enough errors to actually designate the frustration reading level, which is universally agreed upon as 10 or more errors in 100 running words (Ekwall, 1974, p. 365).

Perhaps the most controversial of error categories are insertions and omissions. There is general agreement that omissions and insertions account for a very small portion of oral reading errors and are usually insignificant as far as comprehension of the passage is concerned. Streitz (1925) stated that omissions were merely the product of carelessness. Swanson (1937) and Fairbanks (1937) substantiated this opinion by noting that omitted words were usually "easy" or "common" words. Monroe (1932, p. 165) concurred that omissions were usually words that did not contribute greatly to content, adding that omissions were "probably due to excessive speed of reading." According to Gilmore (1947) omissions and insertions compose such a small proportion of errors that they are negligible. Omissions were found to decrease significantly as the material became more difficult in Christenson's 1966 study of readers at grades four, five

and six. Monroe (1932), Schummers (1954) and McCracken (1961) found that good readers tend to make proportionately greater numbers of word omissions and insertions than poor readers.

More recent investigators have concurred with the opinion that insertions and omissions are relatively inconsequential. D'Angelo (1979) found that 69 per cent of the readers in her study made no insertion or omission errors. She reported that at the instructional level only six per cent of errors were omissions. Y. Goodman (1967) observed that insertions and omissions which do not change meaning increase as reading proficiency increases.

K. Goodman (1980) noted that omissions constitute less than 10 per cent of oral reading errors and that retellings of the passages show that story comprehension is rarely affected by omission of even key words. In line with his linguistic interpretation of errors, he proposed that it is perhaps better for a reader to purposely omit an unknown word than to bother to sound out a non-word.

Recent theorists have hypothesized that reading is a holistic process, "an entity in itself and not just the sum of various decoding and comprehension skills" (Spiegel, 1974 p. 370). In her arguments for this holistic approach to error analysis, Spiegel suggested that "meaning and language should be points of emphasis, not words." She proposed that omissions and insertions be ignored, since the meaning of the passage is rarely affected by their occurrence. She

also proposed that repetitions and self-corrections should be viewed as "encouraging signs that the reader is making use of context and is indeed searching for meaning" (Spiegel, 1974, p. 372).

Monroe (1928, p. 68) observed differences between disabled readers and younger able readers at the same reading levels. The disabled readers "showed more variability in their reading errors" and made "significantly fewer word refusal errors than the normal-progress readers."

In discussing the developmental nature of reading, Gibson (1965, p. 145) states that "some aspects of reading must be mastered before others and have an essential function in a sequence of development of the final skills." She presents three phases of learning to read: learning to differentiate graphic symbols, learning to decode letters to sounds and using progressively higher-order units of structure. Berends (1971) suggests that readers may return to a behavior similar to that of an earlier skill development when material which is too difficult is encountered.

Russell (1973) in his comparison of the oral reading errors of developmental readers and functionally illiterate adults reading at the same level found that, in general, the oral reading error patterns of the two groups were similar. However, at the frustration level there appeared less similarity than at the instructional level. He states that:

> The results of this study lend credence to the developmental theory of reading in that whatever differences exist between children and

> adults do not seem to greatly influence the error patterns exhibited by each group when reading level is held constant (Russell, 1973, p. 57).

Linguistic and Grammatical Aspects of Oral Reading Errors

Researchers in reading have devoted a great deal of attention to words as visual displays. Investigators have tended to study reading errors "as though they resulted simply from inaccurate perception of the written words" (Weber, 1968, p. 115). Unfortunately, this type of analysis fails to take into account that erroneous response words are meaningful constituents of language and insinuates that any variation from the textual stimulus indicates a deficiency in skill.

Spiegel (1974, p. 373) suggested that "minute components are not the important part of reading. What the reader understands from what he has read is the major concern." In her opinion errors recorded in oral reading should reflect this concern and remedial reading programs should provide readers with more practice in anticipating words and meaning, rather than phonic skills. Weber (1968, p. 118) concluded that the "attitude in much of the literature seems to be that every discrepancy from a text indicates a deficiency in skill which requires remedial attention." Hoffman (1979, p. 342) in observing this prevalent attitude commented that this "reflects a notion that reading is an all or nothing mastery task rather than a

progressive movement toward proficiency." Tovey (1979) noted that:

> if reading is viewed as the processing of each segment of print in a precise manner, reading instruction will be restricted to "perfect reading" not fully capitalizing on children's understanding and implicit language abilities which make learning to read possible (p. 302).

K. Goodman (1965, 1967, 1980) and Y. Goodman (1967) have been leaders in the effort to analyze oral reading errors in terms of their linguistic functions. Their highly detailed system for analyzing errors emphasizes the various linguistic levels which may be involved in error responses. K. Goodman (1967) indicates that errors are motivated by grammatical constraints rather than ignorance or carelessness. Cohn (1978) found in his study of readers in the third grade and above that less than 10 per cent of errors are due to lack of knowledge of sound/symbol relationships. In analyzing omisson and insertion errors in particular D'Angelo (1979) found that 97 per cent of insertions did not distort semantics and 82 per cent did not distort syntax. Omission errors did not distort semantics 93 per cent of the time and did not distort syntax 86 per cent of the time. Clay (1968) found in analyzing substitution errors of first graders that 72 per cent of these errors were in an equivalent morpheme class as the textual stimulus, indicating a high incidence of syntactic equivalence between substitutions and textual stimulus. She also noted that responses similar in letter/sound relationship constituted only 43 per cent of oral reading errors.

The fact that students respond more to the grammatical structure of the language than to the visual forms of words was also observed by MacKinnon (1959). He noted that readers sometimes make a second error just to keep the sentence grammatically correct with the first error. In observing oral reading behaviors of college students, Fairbanks (1937) noted that poor readers more often altered the meaning of the passage by their errors than good readers. Both Fairbanks (1937) and Swanson (1937) found that poor readers substituted for easy words as frequently as for more difficult ones.

According to Weber (1968) the most ambitious attempts to take grammatical structure into account have been investigations which attempt to categorize errors by parts of speech. Perhaps the earliest of these studies was conducted by Madden and Pratt in 1941. They found that articles and prepositions were the most frequently omitted parts of speech. They did not, however, provide a frequency distribution of the parts of speech in the passages, so it is difficult to assess the deviation from the distribution.

Bennett (1942) in observing the reading behavior of retarded readers analyzed 34,000 errors and concluded that the errors were usually the same part of speech as the cue word, with 41 per cent of error responses closely associated in meaning with the textual stimulus. This was confirmed by Y. Goodman (1967) and Biemiller (1970). In evaluating errors as to their grammatical acceptability, Biemiller (1970, 1979) noted that 90 per cent of all errors were grammatically

acceptable. Kirby (1979) observed disabled readers in the fourth through seventh grades and found that on difficult passages 76 per cent of readers could be classified as weak in use of grammatical relationships, while on easier passages only two per cent could be so classified.

Another study which attempted to classify errors as to their grammatical acceptability was conducted by MacKinnon in 1959. MacKinnon found more errors first grade readers failed to correct occurred with "operations," or words that link others grammatically, than on nouns. A frequency distribution of parts of speech was included in this study, making it possible to ascertain that differences appeared to be roughly proportionate to the occurrence of these two parts of speech in the text.

Spiegel (1974) stated that substitution of the same part of speech as the stimulus (i.e., a noun for a noun) indicated that the reader was making intuitive use of semantic and syntactic clues. Heitzman and Bloomer (1967, p. 213) found that comprehension was negatively affected by the deletion of modifiers, indicating that "information given through modifiers may be more important than that of other parts of speech in answering comprehension questions."

Of the three types of errors categorized by Goodman as substitutions (self-corrections, semantically-syntactically acceptable substitutions, and semantically-syntactically unacceptable substitutions) Beebe (1980) found that only those errors falling in the semantically-syntactically

unacceptable category detracted from understanding of the passage. Analysis of the oral reading errors of first graders led Clay (1968) to the following conclusions regarding parts of speech of errors: pronouns have a high rate of self-correction (60 per cent); nouns have a low rate of self-correction (20 per cent); and verbs substitued for other verbs agreed with the text in both number and tense 55 per cent of the time.

Summary

Numerous researchers have analyzed oral reading errors in terms of faulty sound/ symbol associations. Others have attempted to analyze oral reading errors in terms of linguistic function. A relatively small number of studies, however, have compared the oral reading behaviors of able and disabled readers or attempted to determine the relationship between oral reading errors and part of speech of the textual stimulus. Of the researchers dealing with parts of speech, few have provided sufficient data to allow for in-depth analysis. In some cases results have been distorted due to the failure to provide frequency distributions of parts of speech in passages, while others have failed to control for the difficulty level of the material for the individual reader.

From this review of the literature, it appears that there is a need for further investigation of the relationship between oral reading errors and the parts of speech of

able and disabled readers, with controls for difficulty level of passage material, sufficient passage length to allow for stabilization of errors, and in-depth reporting of frequency of parts of speech within the passages read.

CHAPTER III

DESIGN AND METHODOLOGY

Description of the Sample

The sample for this study consisted of 20 able and 20 disabled readers who were either attending tutoring sessions at the Oklahoma State University Reading Clinic or were enrolled in second, third, fourth and fifth grade classes in public schools in Stillwater, Oklahoma, and the surrounding area. Each disabled reader's IQ was in the average to above average range as measured by the Wechsler Intelligence Scale for Children-Revised. The disabled reader sample consisted of 10 males and 10 females who were third, fourth and fifth graders.

Each able reader was reading on grade level and a tolerance of plus or minus .75 of a year determined the outer limits of the range of performance. IQ scores were not obtained for able readers and normalcy was assumed. The able reader sample consisted of 10 males and 10 females, two in the third grade and the balance in the second grade.

Each pupil's instructional reading level was between 2.5 and 3.9, as evidenced by performance on the Standard Reading Inventory (see Table I).

TABLE I

DEMOGRAPHIC DISTRIBUTION OF THE SAMPLE

Readers	Sex	School Grade Placement*	Instructional Reading Level (SRI)
Disabled			
1	Male	5.6	2.5
2	Male	4.6	3.0
3	Female	4.7	2.5
4	Female	5.7	2.5
5	Male	4.8	2.5
6	Male	5.8	2.5
7	Female	3.8	3.0
8	Male	4.8	2.5
9	Female	3.9	3.0
10	Female	4.8	3.0
11	Female	4.8	2.5
12	Male	3.8	2.5
13	Female	4.9	3.5
14	Female	3.9	3.5
15	Male	4.8	3.5
16	Female	4.9	3.0
17	Male	5.9	3.0
18	Male	3.9	2.5
19	Female	3.9	3.0
20	Male	3.9	3.5
Able			
1	Female	2.9	3.5
2	Male	3.9	3.0
3	Male	2.9	3.5
4	Male	2.9	3.0
5	Male	2.9	3.0
6	Male	2.9	2.5
7	Female	2.9	3.5
8	Female	2.9	3.0
9	Female	2.9	3.0
10	Male	2.9	3.0
11	Female	2.9	2.5
12	Female	2.9	2.5
13	Male	2.9	2.5
14	Male	2.9	2.5
15	Male	2.9	2.5
16	Male	2.9	2.5
17	Female	2.9	3.0
18	Male	2.9	3.5
19	Male	3.9	3.5
20	Male	2.9	3.5

*In years and months

Testing Procedure

The Weschler Intelligence Scale for Children-Revised (Weschler, 1974) was administered to all disabled readers to determine an IQ range. If the student was in the average or above average range, the reading portion of the Wide Range Achievement Test (Jastak, 1978) was administered as a screening device to determine an approximate entry point for the Standard Reading Inventory (McCracken, 1966). Those students whose instructional reading level on the Standard Reading Inventory passages labeled 2^2 (2.5), 3^1 (3.0), or 3^2 (3.5) were asked to read orally the Stories of Stuever (Revised) (Stuever, 1969) passages which corresponded to their instructional and frustration levels on the Standard Reading Inventory.

Description of Testing Instruments

Wechsler Intelligence Scale for Children-Revised

The Weschler Intelligence Scale for Children-Revised is an individually administered intelligence test for children 6 years 0 months to 16 years 11 months. The author defines intelligence as "the overall capacity of an individual to understand and cope with the world around him" (Weschler, 1974) and avoids equating general intelligence with intellectual ability.

Intelligence quotients (IQ's) are calculated on the basis of ten subtests, five falling within the Verbal

category and five Performance:

Verbal	Performance
Information	Picture Completion
Similarities	Picture Arrangement
Arithmetic	Block Design
Vocabulary	Object Assembly
Comprehension	Coding

Thus, three IQ scores are computed: Verbal, Performance, and Full Scale.

The manual contains no discussion of validity. The norm sample consisted of 2,200 children "purportedly representative of the national population as of 1970 with respect to race, geographic region, occupation of head of household, and urban-rural residence" (Tittle, 1975, p. 1781).

Reliability for all subtests except Coding were obtained by the split-half technique, with appropriate correction for the full length of the test by the Spearman-Brown formula. Test-retest reliability was obtained for Coding. The Verbal, Performance and Full Scale IQ's have high reliabilities across the entire age range, the average coefficients being .94, .90 and .96, respectively.

Standard Reading Inventory

This test is an individually administered reading test which measures reading achievement at pre-primer through seventh reader levels. Only the oral reading section with its accompanying comprehension questions was used in this study. Comprehension of the oral reading passages is tested by both inferential and detail questions. The following

following levels are identified by the use of the scoring sheet: independent, questionable instructional, definite instructional, and frustration. Separate ratings are given for word recognition errors and total errors (word recognition plus behavioral errors).

Content validity is assumed from the manner in which the test was constructed. Words were used in the stories at the levels in which they were introduced in three basal reader series. Sentence length, content, and general style were also based on the basal reader series. Both the Spache (1961) and Dale-Chall (1948) Readability Formulas were used in analyzing the stories. The difficulty levels of the stories were also evaluted subjectively by 25 reading experts. Two studies of concurrent validity and two studies corroborating the content validity were reported in the test manual (McCracken, 1966).

Evidence of reliability was obtained in two studies of elementary school children who took both forms of the test. The correlation between the instructional levels on the two forms was .91 in one and .95 in the other.

Stories of Stuever (Revised)

This test consists of a series of passages each conaining at least 500 words to be read orally. The content of these stories resembles basal reader materials. A 2.5 passage has been added to the original Stories of Stuever (Stuever, 1969) to allow for measurement at this level.

Readability levels of the original stories and additional passage were established using the Spache (1973) formula so that these levels would compare in readability with the equivalent passages on the Standard Reading Inventory. Approximately the same number of sentences and the same number of unfamiliar words were used in each of the four 500-word passages.

The Stories of Stuever (Revised) were written in narrative style and the average length of the lines in the stories is approximately four inches. This agrees with the literature on typography, which maintains that a line "should not exceed four inches" (Uhl, 1937).

Each word in the four passages was categorized as to part of speech in consultation with two professionals in the area of grammatical usage. Ten part of speech categories were used to allow for in-depth analysis. Infinitives were categorized as a preposition and a verb to allow each individual word error to be categorized. Concurrence was reached between this writer and the consultants as to categorizations (see Table II). The frequency distributions of parts of speech by actual count are shown in Table II.

Statistical Techniques Used in the Treatment of the Data

To determine if significant differences exist between the oral reading errors of able and disabled readers in terms of word recognition error types and part of speech of

TABLE II

FREQUENCY DISTRIBUTION OF PARTS OF SPEECH BY PASSAGE

	2.5 The Starry Night	3.0 How Baseball Began	3.5 Mystery of the Creaking Stairs	4.0 Old Grouch Moves In
NOUN	81	77	79	109
PROPER NOUN*	33	46	28	26
PRONOUN	61	59	64	48
VERB	118	116	122	104
ADVERB	54	29	66	30
ADJECTIVE	44	57	43	70
PREPOSITION	50	42	35	64
CONJUNCTION	26	35	36	32
INTERJECTION	0	8	2	0
ARTICLE*	33	57	54	62

*Considered as a separate part of speech categories to allow for more in-depth analysis.

the textual stimulus, multiple t-tests for dependent means were employed. The t-test values were calculated for two-tailed probability using the following computer formula for pooled variance when there were common variances:

$$t_{\bar{d}} = \frac{(\bar{x}_1 - \bar{x}_2)}{s_{\bar{d}}} \quad \text{with } (n_1 + n_2 - 2) \text{ degrees of freedom}$$

where $s_{\bar{d}}$ = difference between the dependent variables for disabled and able readers on comparable Level I and Level II passages

n = number of subjects in a group

$\bar{x}_1$ = mean of scores for disabled readers

$\bar{x}_2$ = mean of scores for able readers

When unequal variances occurred, t could not be computed for the difference in sample means. Instead, an approximation to t was computed using the following formula:

$$t = \frac{(\bar{x}_1 - \bar{x}_2) - (\mu_1 - \mu_2)}{s_1^2/n_1 + s_2^2/n_2}$$

This statistic is not distributed as reader's t. However, the probability for t can be approximated by treating it as t, but with degrees of freedom

$$df = \frac{[(s_1^2/n_1) + (s_2^2/n_2)]^2}{[(s_1^2/n_1)^2/(n_1 - 1)] + [(s_2^2/n_2)^2/(n_2 - 1)]}$$

(Tuccy, 1981)

Since it was not known whether the two populations have the same variance, an F test of sample variances was performed. F was computed:

$$F = \frac{\text{larger } s^2}{\text{smaller } s^2}$$

If the probability for F was greater than .05, the null hypothesis was accepted and t based on the pooled variance estimate was used.

If the probability for F was less than or equal to .05, the null hypothesis was rejected and t based on the separate variance estimate was used (Tuccy, 1981).

The critical t values used in determining significance are:

t_{14}, .05 = 2.145

t_{12}, .05 = 2.179

t_{8}, .05 = 2.306 (Bartz, 1976)

CHAPTER IV

TREATMENT OF DATA AND ANALYSIS OF RESULTS

This study was concerned with the differences between oral reading error types and part of speech of the textual stimulus of able and disabled readers whose instructional reading level (91-94 per cent word recognition) was between 2.5 and 3.9 on the Standard Reading Inventory. Oral reading errors made on extended passages from the Stories of Stuever (Revised) were the basis for the analysis. Included are analyses of oral reading errors made at Level I (91-94 per cent word recognition) and Level II (less than 91 per cent word recognition).

Determination of differences in reading performance were made between able and disabled readers at both Level I (2.5 , 3.0 or 3.5 grade level passages) and Level II (3.0, 3.5 or 4.0 grade level passages).

The hypotheses related to the differences between oral reading errors made by able and disabled readers in terms of part of speech of the textual stimulus and errors types at Level I will be examined first. Next, the hypotheses related to the differences between oral reading errors made by able and disabled readers at Level II will be examined.

Tests of the Hypotheses

1. There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and substitution errors are compared at Level I (91-94 per cent word recognition).

To test this hypothesis, multiple t-tests were performed on the sample means for each part of speech on the three passages read at Level I. The .05 level of significance was chosen rather than the more stringent .01 level to ascertain whether or not a reasonable difference was apparent. As can be seen from Table III, the t values for the Proper Nouns in Passage 2.5 and Verbs in Passage 3.5 are significant. For Proper Nouns in Passage 2.5 the t value is positive, indicating that disabled readers' errors were significantly higher. For Verbs in Passage 3.5 the t value is negative, indicating that able readers' errors were significantly higher. Thus the null hypothesis of no significant differences among sample means of disabled and able readers in this category can be rejected.

Hypothesis 2: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and mispronunciation errors are compared at Level I (91-94 per cent word recognition).

Hypothesis 3: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and

TABLE III

t-VALUES OF THE COMPARISON OF SUBSTITUTION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL I

Part of Speech	Passage 2.5 df = 14 t value*	Passage 3.0 df = 12 t value**	Passage 3.5 df = 8 t value***
Proper Noun	2.21*	0.54	-1.37
Verb	0.68	1.41	2.70***
Noun	0.27	1.47	0.67
Pronoun	-0.87	0.96	0.43
Adjective	0.58	-1.17	-0.60
Adverb	0.93	0.00	-1.07
Preposition	1.28	-0.60	0.90
Conjunction	-0.60	0.19	0.92
Article	0.85	0.27	1.35
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

words aided are compared at Level I (91-94 per cent word recognition).

Hypothesis 4: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and omission errors are compared at Level I (91-94 per cent word recognition).

Hypothesis 5: There is no significant relationship between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and insertion errors are compared at Level I (91-94 per cent word recognition).

For Hypotheses 2, 3, 4 and 5, multiple t-tests were also performed on the sample means. The .05 level of significance was again employed and the critical values for the individual passages remained the same. The results of the tests are presented in Tables IV, V, VI, and VII. The data indicate for Hypotheses 2 and 3, dealing with mispronunciation errors and words aided, the null hypotheses can be accepted, as no significant values were evident at the .05 level.

No significant values are found in Table VI, omission errors, so Hypothesis 4 cannot be rejected.

Table VII presents the data regarding Hypothesis 5. One significant value was found at Level I regarding insertion errors in Passage 3.0 in the cell concerning articles. Thus the null hypothesis for this error type may be rejected.

TABLE IV

t-VALUES OF THE COMPARISON OF MISPRONUNCIATIONS FOR DISABLED AND ABLE READERS AT LEVEL I

Part of Speech	Passage 2.5 df = 14 t value*	Passage 3.0 df = 12 t value**	Passage 3.5 df = 8 t value***
Proper Noun	0.19	0.55	1.26
Verb	-0.17	-0.61	0.25
Noun	-0.12	-1.15	-0.80
Pronoun	0.00	0.41	0.00
Adjective	1.12	-0.98	0.53
Adverb	-0.15	-0.61	1.17
Preposition	0.19	0.00	0.00
Conjunction	0.00	0.00	0.00
Article	0.00	0.00	0.00
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE V

t-VALUES OF THE COMPARISON OF WORDS AIDED FOR DISABLED AND ABLE READERS AT LEVEL I

Part of Speech	Passage 2.5 df = 14 t value*	Passage 3.0 df = 12 t value**	Passage 3.5 df = 8 t value***
Proper Noun	1.22	-2.14	-0.93
Verb	-0.73	-0.70	0.76
Noun	-0.98	-1.11	-0.46
Pronoun	0.88	-1.00	0.00
Adjective	0.50	-0.80	-0.38
Adverb	-1.70	-1.16	0.34
Preposition	-1.65	0.00	-1.26
Conjunction	0.88	0.00	0.00
Article	0.00	0.00	0.00
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE VI

t-VALUES OF THE COMPARISON OF OMISSION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL I

Part of Speech	Passage 2.5 df = 14 t value*	Passage 3.0 df = 12 t value**	Passage 3.5 df = 8 t value***
Proper Noun	0.00	-1.00	0.00
Verb	0.72	-0.69	-0.80
Noun	0.88	0.00	0.29
Pronoun	-0.25	1.55	-0.64
Adjective	-0.21	-1.00	-0.18
Adverb	0.38	-0.61	1.26
Preposition	0.00	0.84	0.29
Conjunction	0.19	0.95	1.08
Article	-0.38	0.40	0.29
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE VII

t-VALUES OF THE COMPARISON OF INSERTION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL I

Part of Speech	Passage 2.5 df = 14 t value*	Passage 3.0 df = 12 t value**	Passage 3.5 df = 8 t value***
Proper Noun	0.00	0.00	0.00
Verb	1.32	0.45	0.00
Noun	-0.18	0.00	0.00
Pronoun	0.38	1.00	0.29
Adjective	0.00	1.00	-0.80
Adverb	-1.15	0.00	-0.25
Preposition	-1.65	1.00	-1.17
Conjunction	0.88	1.55	-1.17
Article	0.18	2.45**	-0.25
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

rejected at the .05 significance level.

Hypothesis 6: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and substitution errors are compared at Level II (less than 91 per cent word recognition).

Multiple t-tests were performed on the sample means for each part of speech on the three passages at Level II (less than 91 per cent word recognition) to test this hypothesis.

In Table VIII two significant values are apparent in Passage 3.0, indicating that disabled readers made significantly more substitution of noun and preposition errors on that passage than did able readers. Although no other values were significant, Hypothesis 6 can be rejected on the basis of the two significant values.

Hypothesis 7: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and mispronunciation errors are compared at Level II (less than 91 per cent word recognition).

Hypothesis 8: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and words aided are compared at Level II (less than 91 per cent word recognition).

Hypothesis 9: There is no significant difference between the oral reading performance of able and disabled

TABLE VIII

t-VALUES OF THE COMPARISON OF SUBSTITUTION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL II

Part of Speech	Passage 3.0 df = 14 t value*	Passage 3.5 df = 12 t value**	Passage 4.0 df = 8 t value***
Proper Noun	1.46	1.61	1.04
Verb	1.17	1.21	1.29
Noun	2.92*	-0.80	-0.14
Pronoun	0.22	0.14	-0.53
Adjective	1.61	-0.24	0.84
Adverb	1.74	1.56	-0.25
Preposition	2.38*	1.42	0.35
Conjunction	-0.13	1.37	2.19
Article	-1.13	1.54	1.37
Interjection	1.05	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

readers when part of speech of the textual stimulus and omission errors are compared to Level II (less than 91 per cent word recognition).

Hypothesis 10: There is no significant difference between the oral reading performance of able and disabled readers when part of speech of the textual stimulus and insertion errors are compared at Level II (less than 91 per cent word recognition).

Multiple t-tests were again employed to determine if significant values were evident concerning Hypotheses 7-10. Table IX presents the results of the t-tests for each part of speech and mispronunciation errors on the three Level II passages. There are no significant values at the .05 level and, therefore, Hypothesis 7 cannot be rejected.

Presented in Table X is the data regarding words aided at Level II. A significant value on the 3.0 passage regarding words aided that are nouns is apparent. The negative t value signifies that able readers were significantly higher on this error category than disabled readers. Hypothesis 8 is rejected.

One significant value can be seen in Table XI. This value concerns the omission of conjunctions in Passage 3.0 and indicates that disabled readers made significantly more of this error type on that particular passage than did able readers. Hypothesis 9 is rejected.

No significant values were found regarding insertion errors at Level II (see Table XII). Hypothesis 10, therefore,

TABLE IX

t-VALUES OF THE COMPARISON OF MISPRONUNCIATION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL II

Part of Speech	Passage 3.0 df = 14 t value*	Passage 3.5 df = 12 t value**	Passage 4.0 df = 8 t value***
Proper Noun	1.44	1.26	1.15
Verb	1.17	0.42	1.28
Noun	1.96	0.41	1.58
Pronoun	0.00	0.00	0.00
Adjective	1.44	-0.93	0.09
Adverb	0.88	0.00	0.29
Preposition	0.00	2.12	-0.80
Conjunction	0.00	0.00	0.00
Article	0.00	0.00	0.00
Interjection	0.88	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE X

t-VALUES OF THE COMPARISON OF WORDS AIDED FOR DISABLED AND ABLE READERS AT LEVEL II

Part of Speech	Passage 3.0 df = 14 t value*	Passage 3.5 df = 12 t value**	Passage 4.0 df = 8 t value***
Proper Noun	-0.59	0.00	-1.77
Verb	-0.42	-0.96	-0.38
Noun	-2.52*	0.35	-0.82
Pronoun	-0.85	0.41	0.00
Adjective	-1.97	-0.44	0.27
Adverb	-0.96	-1.48	-1.17
Preposition	0.00	0.61	-0.80
Conjunction	0.88	0.00	-0.80
Article	0.00	0.00	0.00
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE XI

t-VALUES OF THE COMPARISON OF OMISSION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL II

Part of Speech	Passage 3.0 df = 14 t value*	Passage 3.5 df = 12 t value**	Passage 4.0 df = 8 t value***
Proper Noun	0.00	0.00	0.00
Verb	0.38	0.95	0.35
Noun	-0.18	0.00	-0.80
Pronoun	-0.67	0.82	1.26
Adjective	0.62	0.00	0.00
Adverb	1.15	0.87	0.00
Preposition	-0.67	0.00	-0.73
Conjunction	1.32	2.94**	-0.80
Article	-1.50	-0.50	1.08
Interjection	-1.15	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

TABLE XII

t-VALUES OF THE COMPARISON OF INSERTION ERRORS FOR DISABLED AND ABLE READERS AT LEVEL II

Part of Speech	Passage 3.0 df = 14 t value*	Passage 3.5 df = 12 t value**	Passage 4.0 df = 8 t value***
Proper Noun	0.00	0.00	0.00
Verb	1.75	1.55	0.00
Noun	0.00	0.00	0.00
Pronoun	0.00	0.45	0.00
Adjective	-1.15	-1.00	-0.80
Adverb	0.88	1.92	0.00
Preposition	0.00	-1.00	1.08
Conjunction	-0.21	0.87	0.00
Article	0.03	0.61	-0.80
Interjection	0.00	0.00	0.00

*Significant at the .05 level if t is greater than 2.145
N = 9 Disabled, 7 Able

**Significant at the .05 level if t is greater than 2.179
N = 7 Disabled, 7 Able

***Significant at the .05 level if t is greater than 2.306
N = 4 Disabled, 6 Able

cannot be rejected.

Table XIII presents a summary of significant results by error type and Table XIV shows the percentage of each error type at Levels I and II. It is obvious from Table XIV that the majority of oral reading errors are substitutions.

Tables XV and XVI present the percentage of errors by part of speech at Levels I and II. Within the words aided, mispronunciations, and substitution categories, more errors were made on nouns and verbs than on other parts of speech. The largest number of omission and insertion errors were on articles.

Tables XVII and XVIII present the percentage of part of speech errors by passage at Levels I and II. Table XIX provides the percentages of each part of speech contained in the passages to allow for comparison with errors made. The figures in these tables indicate that the errors within part of speech categories were roughly proportionate to the percentage of each part of speech contained in the passages.

Summary

This chapter included a detailed account of the treatment of the data. Multiple t-tests of sample means were used to determine if there were significant differences between the sample means of disabled and able readers for five oral reading error types (substitutions, mispronunciations, words aided, insertions, omissions) and ten part of

TABLE XIII

SIGNIFICANT RESULTS OF ERROR TYPE AND PART OF SPEECH CATEGORIES

Error Type	Part of Speech	Passage	Level*	Significant Results**
Substitutions	Proper Noun	2.5	I	able<disabled
	Verb	3.5	I	able>disabled
	Noun	3.0	II	able<disabled
	Preposition	3.0	II	able<disabled
Mispronunciations				None
Words Aided	Noun	3.0	II	able>disabled
Insertions	Article	3.0	I	able<disabled
Omissions	Conjunction	3.5	II	able<disabled

*Level I - 91-94 per cent word recognition
Level II - less than 91 per cent word recognition

**Significant at the .05 level

TABLE XIV

PERCENTAGE OF ERRORS BY ERROR TYPES

Error Type	Level I*	Level II**
Words Aided	12	15
Mispronunciations	8	9
Substitutions	72	69
Omissions	5	5
Insertions	3	2

*91-94 per cent word recognition

**Less than 91 per cent word recognition

TABLE XV

PERCENTAGE OF ERRORS BY PART OF SPEECH
WITHIN ERROR CATEGORIES AT LEVEL I

Total Errors	Words Aided (252)	Mispro-nunciation (167)	Substitution (1476)	Omission (106)	Insertion (61)
Proper Noun	16	11	6	1	—
Verb	30	34	23	13	8
Noun	24	26	19	5	7
Pronoun	1	3	11	12	10
Adjective	10	11	14	8	3
Adverb	16	13	11	7	8
Preposition	2	16	6	16	11
Conjunction	—	3	3	12	11
Article	—	—	6	26	43
Interjection	—	—	—	—	—

TABLE XVI

PERCENTAGE OF ERRORS BY PART OF SPEECH
WITHIN ERROR CATEGORIES AT LEVEL II

Total Errors	Words Aided (322)	Mispro-nunciation (189)	Substitution (1495)	Omission (111)	Insertion (45)
Proper Noun	23	16	7	—	—
Verb	29	29	23	11	13
Noun	16	29	26	3	4
Pronoun	2	1	8	11	7
Adjective	16	16	14	5	7
Adverb	13	7	7	9	11
Preposition	1	2	5	10	4
Conjunction	1	—	3	13	18
Article	—	—	5	38	31
Interjection	—	—	1	1	—

TABLE XVII

PERCENTAGE OF PART OF SPEECH ERRORS BY PASSAGE AT LEVEL I*

	2.5 The Starry Night	3.0 How Baseball Began	3.5 Mystery of the Creaking Stairs	Level I Average
NOUN	27	18	26	23
PROPER NOUN	14	5	9	10
PRONOUN	7	8	5	7
VERB	18	26	29	23
ADVERB	5	17	2	8
ADJECTIVE	13	14	16	14
PREPOSITION	4	3	7	4
CONJUNCTION	3	5	1	3
INTERJECTION	2	—	—	1
ARTICLE	8	4	4	6

*91-94 per cent word recognition

TABLE XVIII

PERCENTAGE OF PART OF SPEECH ERRORS BY PASSAGE AT LEVEL II*

	3.0 How Baseball Began	3.5 Mystery of the Creaking Stairs	4.0 Old Grouch Moves In	Level II Total
NOUN	27	18	26	23
PROPER NOUN	14	5	9	10
PRONOUN	7	8	5	7
VERB	18	26	29	23
ADVERB	5	17	2	8
ADJECTIVE	13	14	16	14
PREPOSITION	4	3	7	4
CONJUNCTION	3	5	1	3
INTERJECTION	2	—	—	1
ARTICLE	8	4	4	6

*Less than 91 per cent word recognition

TABLE XIX

PERCENTAGES OF PARTS OF SPEECH BY PASSAGE

	2.5 The Starry Night	3.0 How Baseball Began	3.5 Mystery of the Creaking Stairs	4.0 Old Grouch Moves In
NOUN	16	15	15	20
PROPER NOUN	6	9	5	5
PRONOUN	12	11	12	9
VERB	23	22	23	19
ADVERB	10	6	12	6
ADJECTIVE	8	11	8	13
PREPOSITION	10	8	7	12
CONJUNCTION	5	7	7	6
INTERJECTION	0	2	0	0
ARTICLE	6	11	10	11

speech categories (proper nouns, verbs, nouns, pronouns, adjectives, adverbs, prepositions, conjunctions, articles and interjections). Comparisons were made at Level I (91-94 per cent word recognition) on passages with readability levels of 2.5, 3.0 and 3.5. Disabled readers made significantly more errors on Proper Noun/Substitutions on the 2.5 passage and Article/Insertions on the 3.0 passage. Able readers made significantly more errors than disabled readers on Verb/Substitutions on the 3.5 passage.

The comparisons made at Level II (less than 91 per cent word recognition) involved passages with readability levels of 3.0, 3.5 and 4.0. Disabled readers made significantly more errors than able readers on Noun/Substitutions and Preposition/Substitutions on Passage 3.0 and Conjunction/Omissions on Passage 3.5. Able readers made significantly more errors than disabled readers on Noun/Pronunciations on Passage 3.0.

The majority of oral reading errors at Level I and Level II by both able and disabled readers were substitutions. Less errors were made on insertions and omissions than any other error type and more of these errors occurred with articles than with any other part of speech. When the errors made on the different part of speech categories are compared with the frequency of occurrence of that part of speech in the passages, it can be seen that the errors are roughly proportionate to the occurrence in the passages.

CHAPTER V

SUMMARY AND CONCLUSIONS

General Summary of the Investigation

This study was concerned with oral reading error types and the parts of speech of errors made by disabled and able readers. All readers evidenced an instructional reading level of 2.5, 3.0, or 3.5 on the Standard Reading Inventory. Error categorizations were based on oral reading errors made by each reader on extended passages from the Stories of Stuever (Revised) at two levels (91-94 per cent word recognition and less than 91 per cent word recognition). The readability level of these passages corresponded to that of the Standard Reading Inventory passages.

The sample consisted of 40 second, third, fourth and fifth graders attending the Oklahoma State University Reading Clinic or an elementary school in the central Oklahoma area who met the criteria set for the study. Twenty were disabled readers (.75 of a year below their expected reading level based on the Bond formula) with a full scale or verbal IQ of 90 or above on the Wechsler Intelligence Scale for Children-Revised and 20 were readers who were reading on grade level. None of the subjects had discernible handicaps which would interfere with their reading of the test

materials or the subsequent analysis of reading errors.

The oral reading at sight of the oral paragraphs from the Standard Reading Inventory, as well as the extended passages from the Stories of Stuever (Revised) were tape recorded. Comparisons were made between mean scores within error categories of disabled and able readers on like passages. This was done at Level I (91-94 per cent word recognition) and Level II (less than 91 per cent word recognition). Comparisons were made between five oral reading error types and ten parts of speech.

Multiple t-tests were computed to determine the significance of differences between disabled and able readers in terms of error type and part of speech of oral reading errors. The t-tests were computed at both Level I and Level II.

Conclusions

The results of this study indicate that there are significant differences in errors made by disabled and able readers in terms of part of speech of the textual stimulus and oral reading error types at both Level I (91-94 per cent word recognition) and Level II (less than 91 per cent word recognition). These differences, however, were not consistent throughout the passages.

At Level I disabled readers made significantly more errors on Proper Noun/Substitutions on the 2.5 passage and Article/Insertions on the 3.0 passage. Able readers made

significantly more errors than disabled readers on Verb/Substitutions on the 3.5 passage.

At Level II disabled readers made significantly more errors than able readers on Noun/Substitutions and Preposition/Substitutions on Passage 3.0 and Conjunction/Omissions on Passage 3.5. Able readers made significantly more errors than disabled readers on Noun/Words Aided on Passage 3.0. Table XIII summarizes these results.

Although some differences were significant between disabled and able readers, none of these values was consistently significant across passages. This would seem to indicate that the differences may have been due more to the content and linguistic structure of the individual passages than to the categories being measured.

In relation to the broader questions posed by this study, a number of conclusions were drawn. The results of this study concur with previous research in evidencing the majority of oral reading errors to be substitutions (see Table XIV and Figures 1 and 2). This held true for both able and disabled readers at Levels I and II. At Level I the percentage of oral reading errors that were substitutions was 68 per cent for able readers and 75 per cent for disabled readers. At Level II the proportions were 65 per cent for able readers and 71 per cent for disabled (see Figures 1 and 2). For all readers combined substitutions constituted 72 per cent of the Level I errors and 69 per cent of the Level II errors (see Table XIV).

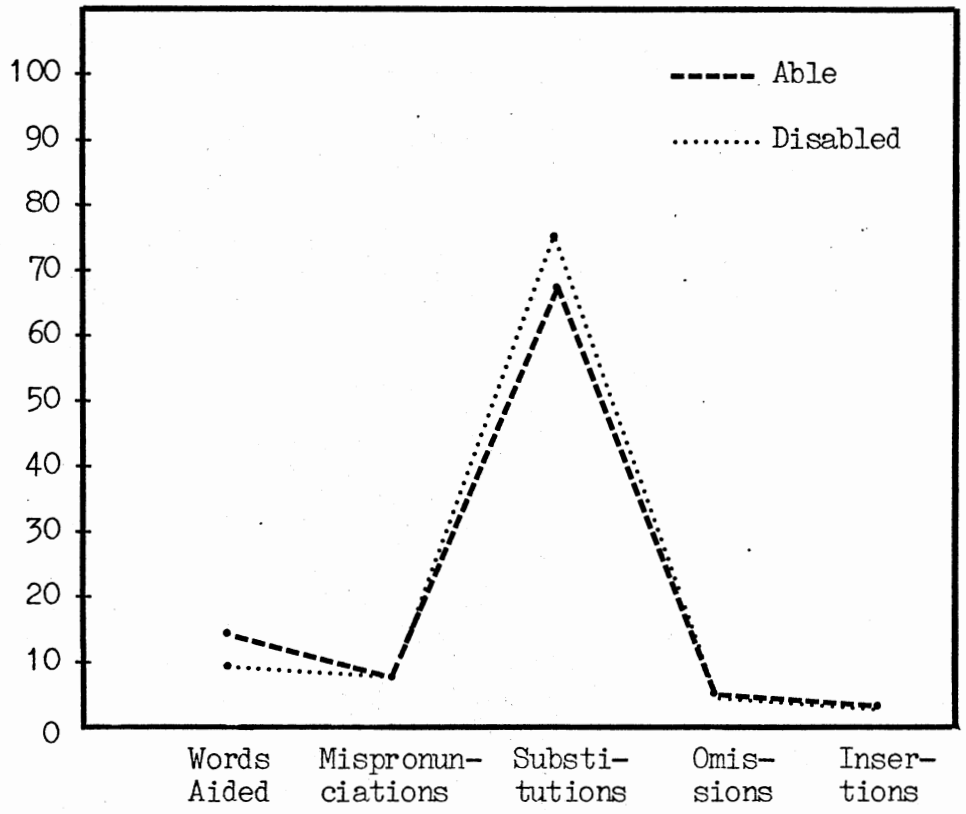

Figure 1. Percentages Within Error Categories at Level I

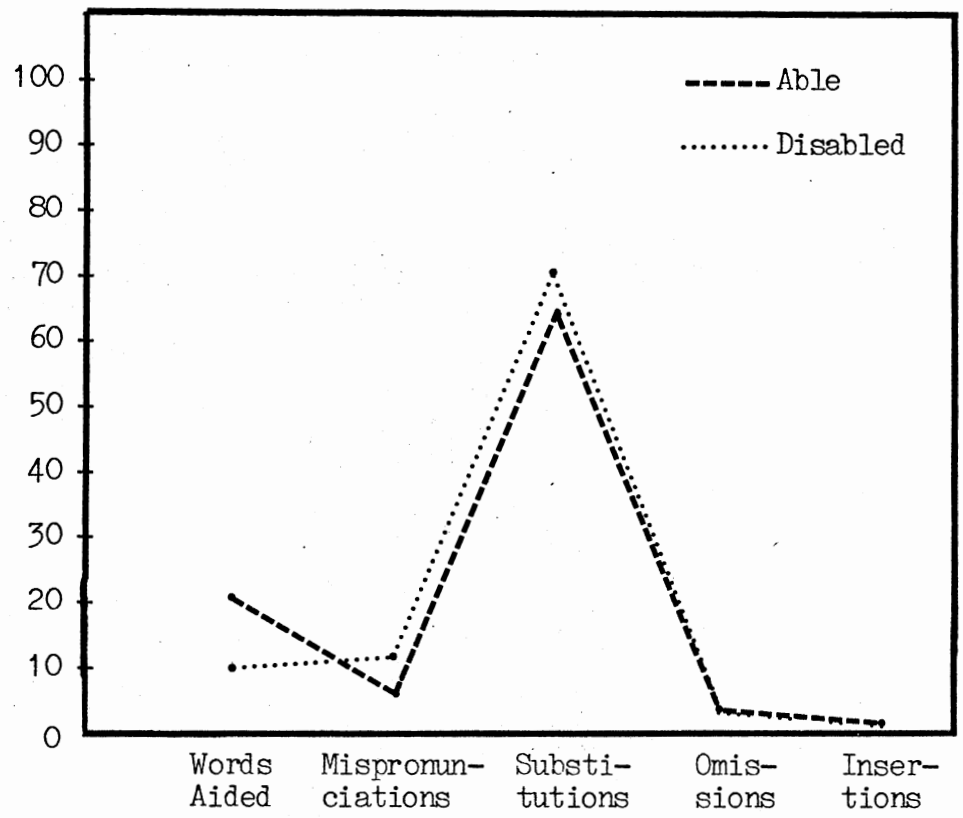

Figure 2. Percentages Within Error Categories at Level II

When substitution errors are combined with mispronunciation errors, these percentages become 80 per cent at Level I and 78 per cent at Level II (see Table XIV). These percentages are very close to the 73 per cent found by Clay (1968) and 87 per cent found by D'Angelo (1975), both of whom combined these categories in reporting their results.

Results for the Words Aided category in this study evidenced a greater number of refusals on the part of able readers than disabled readers at both Level I and Level II. At Level I 15 per cent of the errors made by able readers were refusals compared with 10 per cent for disabled readers. At Level II the findings were 21 per cent for able and 10 per cent for disabled (see Figures 1 and 2). This contradicts the findings of Schummers (1956), who found poor readers exhibited seven times as many refusal errors as able readers. Although these figures lend some credence to the findings of several researchers (Killgallon, 1942; Christenson, 1966; Berends, 1971; Bell, 1973) that words pronounced by the examiner due to refusal on the part of the reader to attempt the word increase as the difficulty level of the material increases, this was true only for able readers in the current study, with the disabled sample exhibiting the same percentage of words aided at the more difficult Level II as on Level I (10 per cent).

Insertion and omission errors in this study constituted a very small part of the total errors--three per cent for both able and disabled readers at Level I and two per

cent for both groups at Level II (see Figures 1 and 2). This concurs with the general agreement among researchers that omissions and insertions account for only a very small proportion of errors. These results, however, contradict the findings of Monroe (1932), Schummers (1954) and McCracken (1961) who found that good readers tend to make more omissions and insertions than poor readers. Although Christenson (1966) found omission errors decreased significantly as the material became more difficult, the current study showed a decrease of only one per cent between Level I (91-94 per cent word recognition) and the more difficult Level II (less than 91 per cent word recognition) passages.

Figures 1 and 2 show that the error patterns of able and disabled readers are basically the same at both Level I and Level II. This reaffirms the developmental nature of the reading process and concurs with the contention of Russell (1973, p. 34) that "little difference exists in skill deficiencies exhibited by readers common to a reading level, regardless of chronological age."

Within part of speech categories the words which readers most frequently refused to attempt (Words Aided) at both Level I and Level II were Verbs. Verbs were also the most frequently mispronounced part of speech at both levels, although at Level II Nouns showed an equal percentage. Nouns and Verbs were the most frequent source of substitution errors at both levels (see Tables XV and XVI).

Articles and Prepositions were the most frequently

omitted part of speech at Level I (see Table XV). This concurs with the findings of Madden (1941). However, while Articles were still the main source of omission errors at Level II, Conjunctions became the second most frequent source (see Table XVI).

At Level I and Level II insertion errors were more often Articles than any other part of speech (see Tables XV and XVI).

Tables XVII and XVIII present the percentage of errors by part of speech at Levels I and II for individual passages. Although Nouns and Verbs appear to be the source of more errors than the other parts of speech, a comparison with Table XIX, showing percentages of parts of speech occurring in each passage, reveals that the errors on Nouns and Verbs are roughly proportionate to their occurrence in the passages. Figures 3, 4, 5 and 6 illustrate the relationship between the proportions of parts of speech in each passage and the parts of speech of the errors made on that passage by both able and disabled readers. A number of conclusions can be drawn from this study which have implications for both classroom and clinical diagnostic situations. It appears that for the purpose of determining instructional reading levels, the only errors which should be counted are substitutions, mispronunciations and words aided. Omissions and insertions constitute such a small portion of errors and usually occur on words which are so unimportant to the meaning of the passage that they are inconsequential.

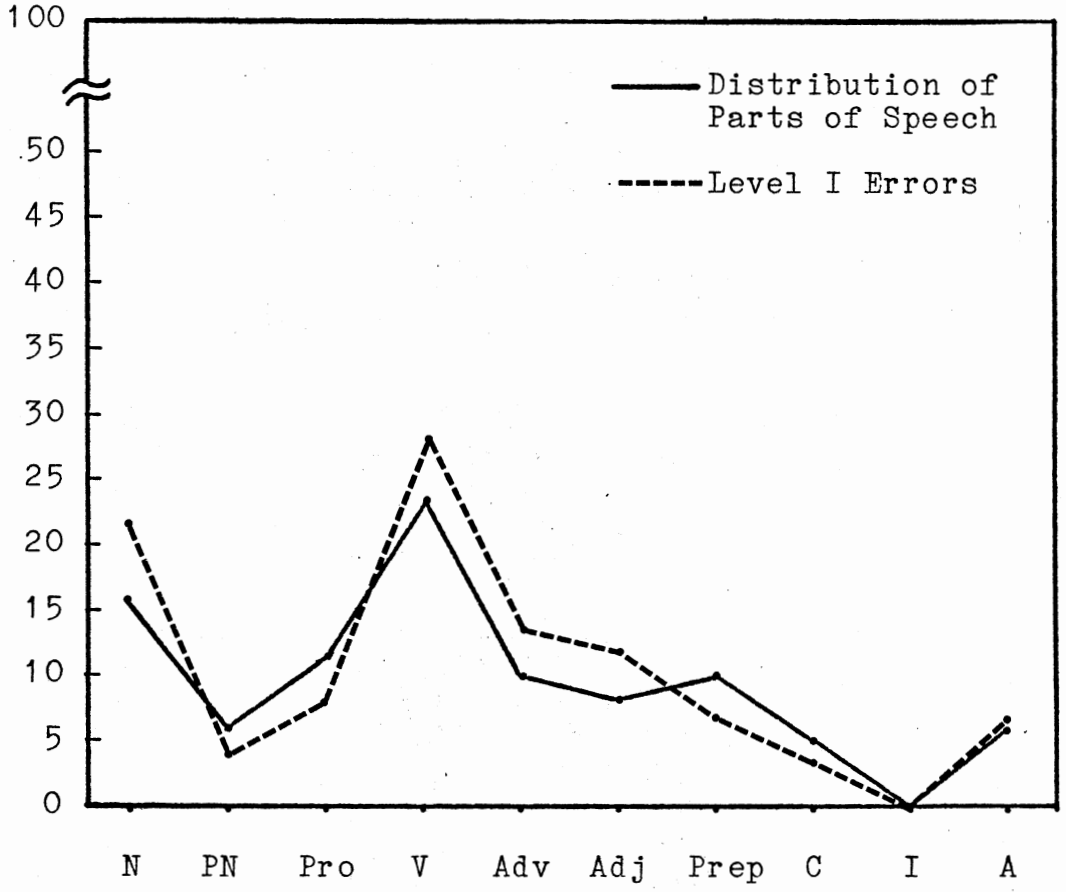

Figure 3. Percentages of Parts of Speech and Errors on Passage 2.5

N = Noun
PN = Proper Noun
Pro = Pronoun
V = Verb
Adv = Adverb
Adj = Adjective
Prep = Preposition
C = Conjunction
I = Interjection
A = Article

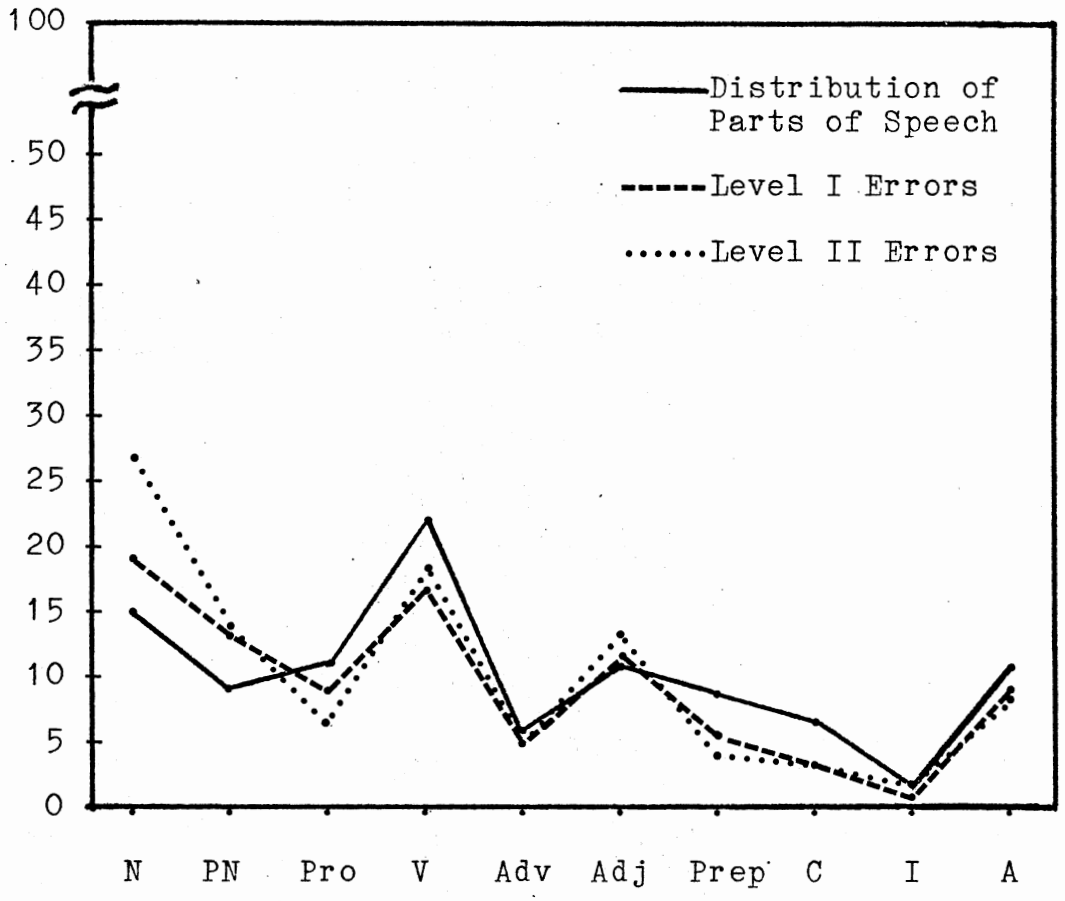

Figure 4. Percentages of Parts of Speech and Errors on Passage 3.0

N = Noun
PN = Proper Noun
Pro = Pronoun
V = Verb
Adv = Adverb
Adj = Adjective
Prep = Preposition
C = Conjunction
I = Interjection
A = Article

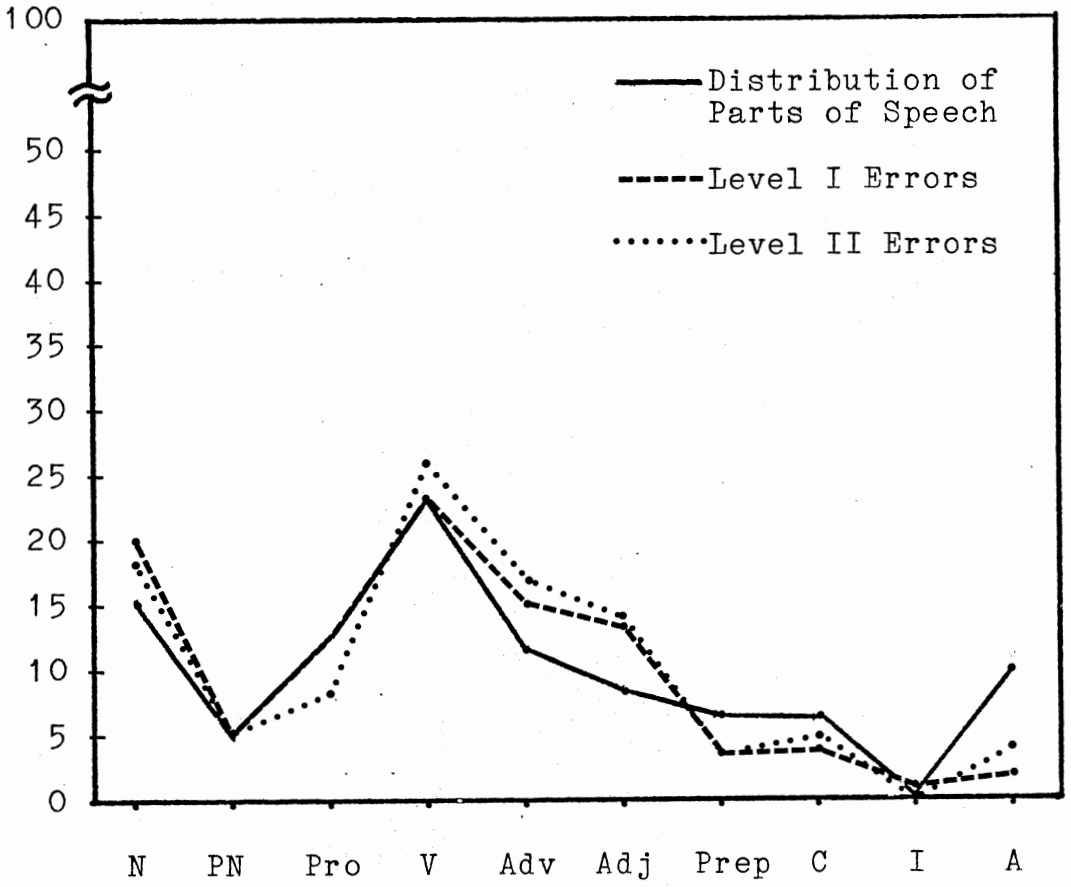

Figure 5. Percentages of Parts of Speech and Errors on Passage 3.5

N = Noun
PN = Proper Noun
Pro = Pronoun
V = Verb
Adv = Adverb
Adj = Adjective
Prep = Preposition
C = Conjunction
I = Interjection
A = Article

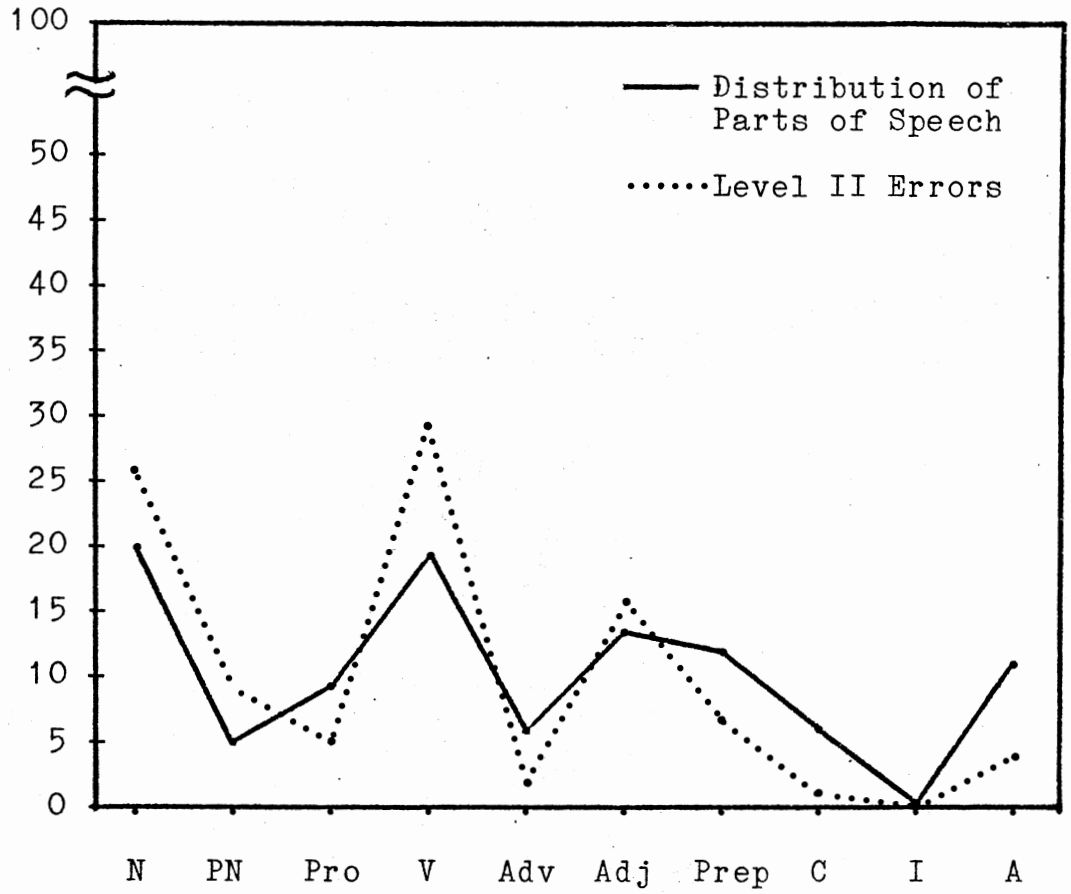

Figure 6. Percentages of Parts of Speech and Errors on Passage 4.0

N = Noun
PN = Proper Noun
Pro = Pronoun
V = Verb
Adv = Adverb
Adj = Adjective
Prep = Preposition
C = Conjunction
I = Interjection
A = Article

Perhaps the most important implication of this study is that the findings reinforce the contention that reading is a developmental process. This is demonstrated by the similar error patterns of able and disabled readers in the study. A deficit model for reading appears to be inappropriate.

For researchers the findings of this study point to the necessity for appropriate levels of reading material to be used for each reader when oral reading errors are to be analyzed. Differences between error patterns for able and disabled readers were minimal when appropriate materials were used.

Recommendations

1. A study should be made of disabled and able readers reading other experimental passages in which the content and linguistic structure differ from that of the current passages to determine whether or not there are differences which persist across types of reading materials.

2. It is recommended that this study be replicated at reading levels from 4.0 to 6.0 to ascertain whether or not patterns of differences occur at these levels.

3. It is recommended that this study be replicated with a larger sample size to determine whether or not the same patterns of errors would be evidenced.

BIBLIOGRAPHY

Bartz, Albert E. Basic Statistical Concepts in Education and the Behavioral Sciences. Minneapolis, Minnesota: Burgess Publishing Company, 1976.

Beebe, Mona J. The Effect of Different Types of Substitution Miscues on Reading. Reading Research Quarterly, 1980, 15(3), 324-335.

Bell, Anne W. A Study of the Shift in Error Patterns Between Instructional and Frustration Levels Among Third Grade Developmental Readers. Unpublished Doctoral Dissertation, Oklahoma State University, 1973.

Bennett, Annette. An Analysis of Errors in Word Recognition Made by Retarded Readers. Journal of Educational Psychology, 1942, 33, 25-38.

Berends, Margery L. An Analysis of Error Patterns, Rates and Grade Equivalent Scores on Selected Reading Measures at Three Levels of Performance. Unpublished Doctoral Dissertation, Oklahoma State University, 1971.

Biemiller, Andrew J. The Development of the Use of Graphic and Contextual Information as Children Learn to Read. Reading Research Quarterly, Fall 1970, 6(1), 75-96.

_____. Changes in the Use of Graphic and Contextual Information as Functions of Passage Difficulty and Reading Achievement Level. Journal of Reading Behavior, Winter 1979, 11(4), 307-318.

Christenson, A.A. A Diagnostic Study of Oral Reading Errors of Intermediate Grade Children at Their Independent, Instructional and Frustration Reading Levels. Unpublished Doctoral Dissertation, Colorado State College, 1966.

Clay, Marie M. A Syntactic Analysis of Reading Errors. Journal of Verbal Learning and Verbal Behavior, 1968, 7, 434-438.

Cohen, Alice S. Oral Reading Errors of First Grade Children Taught by a Code Emphasis Approach. Reading Research Quarterly, 1974-75, 10(4), 616-650.

Cohn, Marvin and D'Alessandro, Cynthia. When is a Decoding Error Not a Decoding Error? The Reading Teacher, December 1978, 32, 341-344.

Dale, Edgar and Chall, Jeanne. A Formula for Predicting Readability. Educational Research Bulletin, February 1948, 28, 37-54.

D'Angelo, Karen and Wilson, Robert M. How Helpful is Insertion and Omission Miscue Analysis? The Reading Teacher, February 1979, 32, 519-520.

Ekwall, Eldon E. Should Repetitions Be Counted as Errors? The Reading Teacher, January 1974, 27, 365-367.

Fairbanks, G. The Relationship Between Eye Movements and Voice in the Oral Reading of Good and Poor Silent Readers. Psychological Monographs, 1937, 48(3), 78-107.

Gates, Arthur I. and McKillop, A.S. Gates-McKillop Reading Diagnostic Tests. New York: Bureau of Publications, Teachers College, Columbus University, 1962.

Gibson, E.J. Learning to Read. Science, 1965, 148, 143-148 .

Gilmore, J.V. The Relation Between Certain Oral Reading Habits and Oral and Silent Reading Comprehension. Unpublished Doctoral Dissertation, Harvard University, 1947.

_____. Gilmore Oral Reading Test. Yonkers-on-Hudson : World Book, 1952.

Gonzales, Phillip C. The Effect of Repeated Oral Readings at Instructional and Frustration Levels on Reading Performance of Third Grade Developmental Readers. Unpublished Doctoral Dissertation, Oklahoma State University, 1974.

Gonzales, Phillip C. and Elijah, David. Stability of Error Patterns on the Informal Reading Inventory. Reading Improvement, Winter 1978, 15(4), 279-288.

Goodman, K.S. A Linguistic Study of Cues and Miscues in Reading. Elementary English, October 1965, 41, 639-643.

_____. Reading: A Psycholinguistic Guessing Game. Journal of the Reading Specialist, 1967, 4, 126-135.

Goodman, K.S. and Gollasch, Frederick V. Word Omissions: Deliberate and Non-Deliberate. Reading Research Quarterly, 1980, 16(1), 6-31.

Goodman, Yetta M. A Psycholinguistic Description of Oral Reading Phenomena in Selected Young Beginning Readers. Unpublished Doctoral Dissertation, Wayne State University, 1967.

Graham, Steve. Word Recognition Skills of Learning Disabled Children and Average Students. Reading Psychology, Fall 1980, 2(1), 23-33.

Heitzman, Andrew J. and Bloomer, Richard H. The Effect of Non-overt Reinforced Cloze Procedure Upon Reading Comprehension. Journal of Reading, December 1967, 11, 213-223.

Hoffman, James V. On Providing Feedback to Reading Miscues. Reading World, May 1979, 18(4), 342-50.

Jastak, J.F. and Jastak, S.R. The Wide Range Achievement Test. Wilmington, Delaware: Guidance Associates, 1978.

Killgallon, Patsy A. A Study of Relationships Among Certain Pupil Adjustments in Language Situations. Unpublished Doctoral Dissertation, Pennsylvania State College, 1942.

Kirby, Michael W. Passage Readability Affects the Oral Reading Strategies of Disabled Readers. The Reading Teacher, January 1979, 32, 390-396.

MacKinnon, A.R. How Do Children Learn to Read? Vancouver: Copp Clark, 1959.

Madden, Mable and Pratt, Marjorie. An Oral Reading Survey as a Teaching Aid. Elementary English Review, 1941, 18, 122-126, 159.

McCracken, Robert A. Standard Reading Inventory. Klamath Falls, Oregon: Klamath Printing Company, 1966.

_____. The Oral Reading Performance of a Second Grade Class Using an Informal Reading Test. Journal of Educational Research, November, 1961, 26 113-117.

Monroe, Marion. Children Who Cannot Read. Chicago: University of Chicago Press, 1932.

Ray, Darrel D. A Qualitative Analysis of Oral Reading Behavior. Unpublished paper, Oklahoma State University, 1969.

Russell, Sheldon Noel. Error Pattern Relationships of Developmental Readers and Functionally Illiterate Adults. Unpublished Doctoral Dissertation, Oklahoma State University, 1973.

Schale, Florence C. Changes in Oral Reading Errors at Elementary and Secondary Levels. Academic Therapy Quarterly, 1966, 1, 225-229.

Schlieper, Anne. Oral Reading Errors in Relation to Grade and Level of Skill. The Reading Teacher, December 1977, 31, 283-287.

Schummers, J.L. Word Pronunciation in the Oral Sight-Reading of Third-Grade Children. Unpublished Doctoral Dissertation, University of Minnesota, 1956.

Spache, George. Good Reading for Poor Readers. The Garrard Press Publishers, 1961.

Spache, George and Spache, Evelyn. Reading in the Elementary School, 3rd Edition. Boston: Allyn and Bacon, 1973.

Spiegel, Dixie L. Holistic Approach to Diagnosis and Remediation. The Reading Teacher, January 1974, 370-374.

Stafford, Clarice M. An Analysis of the Types of Oral Reading Errors in a Sample of Fourth Grade Pupils. Unpublished Doctoral Dissertation, Wayne State University, 1967. In Dissertation Abstracts; Ann Arbor, Michigan: University Microfilms, 1968.

Stuever, Rita F. Analysis of Relationship of Length of Passage to Categories of Oral Reading Errors. Unpublished Doctoral Dissertation, Oklahoma State University, 1969.

Swanson, D.E. Common Elements in Silent and Oral Reading. Psychological Monographs, 1937, 48(3), 36-60.

Tittle, Carol Kehr. Review of WISC-R. In Oscar Buros (Ed.), The Eighth Mental Measurements Yearbook. New Jersey: The Gryphon Press, 1978.

Tovey, Duane R. Teachers' Perceptions of Children's Reading Miscues. Reading Horizons, Summer 1979, 19(4), 302-307.

Tuccy, James. Subprogram T-Test: Comparison of Sample Means. In C. Hadlai Hull and Norman H. Nie (Eds.) Statistical Package for the Social Sciences. New York: McGraw-Hill, 1981.

Uhl, Willis L. The Materials of Reading. The Teaching of Reading: A Second Report, Thirty-Sixth Yearbook of the National Society for the Study of Education, Part I, Bloomington, Illinois: Public School Publishing Company, 1937.

Weber, Rose-Marie. The Study of Oral Reading Errors: A Survey of the Literature. Reading Research Quarterly, Fall 1968, 4(1), 96-119.

_____. First Grader's Use of Grammatical Context in Reading. In H. Levin & J.P. Williams (Eds.) Basic Studies in Reading, New York: Basic Books, 1970.

_____. A Linguistic Analysis of First Grade Reading Errors. Reading Research Quarterly, 1970, 5, 427-451.

Wechsler, David. Wechsler Intelligence Scale for Children-Revised Manual. New York: The Psychological Corporation, 1974.

VITA 2

Margaret Drumm Harrison

Candidate for the Degree of

Doctor of Education

Thesis: A STUDY OF THE DIFFERENCES IN ORAL READING BEHAVIOR BETWEEN ABLE AND DISABLED READERS

Major Field: Curriculum and Instruction

Biographical:

Personal Data: Born at Stillwater, Oklahoma, November 19, 1946, the daughter of C. Wayne and Rachel R. Drumm.

Education: Attended elementary and secondary school in Stillwater, Oklahoma; graduated from C. E. Donart High School, Stillwater in 1965; received the Bachelor of Science in Education degree from Central State University, Edmond, Oklahoma in 1972; received the Master of Science degree from Oklahoma State University, Stillwater in 1979; completed the requirements for the Doctor of Education degree in December, 1981.

Professional Experience: Taught fourth grade at Allen Elementary, Houston, Texas from 1973-74; taught first grade at Northside Baptist Day School, Victoria, Texas from 1974-75; served as Right-to-Read Coordinator at Region III Education Service Center, Victoria, Texas from 1975-78; instructor of college reading improvement, 1978-79; clinician, OSU Reading Clinic, 1979-80; instructor of Foundations of Reading Instruction, Summer 1980; instructor of Methods of Reading Instruction and supervisor of student teachers, 1980-81; instructor of graduate course in diagnosis and remediation of reading difficulties, Summer 1981.