

THE RELATIONSHIP OF LANGUAGE ABILITIES AND  
READING PERFORMANCE OF INTERMEDIATE  
ABLE AND DISABLED READERS  
AT THREE GRADE LEVELS

By

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## NOMENCLATURE

4A	fourth grade able reading group
4D	fourth grade disabled reading group
6A	sixth grade able reading group
6D	sixth grade disabled reading group
8A	eighth grade able reading group
8D	eighth grade disabled reading group
CMGM	<u>Gates-MacGinitie Reading Comprehension</u> subtest
ATGM	<u>Gates-MacGinitie Reading Number Attempted</u> subtest
CRMG	<u>Gates-MacGinitie Reading Number Correct</u> subtest
VOGM	<u>Gates-MacGinitie Reading Vocabulary</u> subtest
PPVT	<u>Peabody Picture Vocabulary Test</u>
HWDC	number of hard words not found on the <u>Dale List of 3,000 Familiar Words</u>
WISC-R	<u>Weschler Intelligence Scale for Children-Revised</u>
VOWR	<u>WISC-R Vocabulary</u> subtest
INWR	<u>WISC-R Information</u> subtest
SMWR	<u>WISC-R Similarities</u> subtest
COWR	<u>WISC-R Comprehension</u> subtest
VCWR	verbal comprehension score as determined by the Kaufman analysis of the <u>WISC-R</u>
SLDC	sentence length from the <u>Dale-Chall Readability Formula</u>
SLSM	sentence length from the <u>Syntactic Maturity Test</u>

T-Unit	one main clause plus any subordinate clause or nonclausal structure that is attached to or embedded in it
MCLI	main clause coordination index (T-Unit/sentence)
SCLI	subordinate clause index (clauses/T-Units)
TUSM	main clause length (words/T-Units)
SLSM	sentence length (words/sentence)
CLSM	clause length (words/clause)
DIQ	derviati <sup>o</sup> n intelligence quotient from the nonverbal battery of the <u>Lorge-Thorndike Intelligence Test</u>
RS	raw score
SS	scaled score
St.s	standard score
SD	standard deviation

## CHAPTER I

### PRESENTATION OF THE PROBLEM

#### Introduction

Most children show a remarkable language learning ability by acquiring coherent speech with no formal instruction in oral language. Children learn language by being exposed to speech in different situations. Where early speech may be learned and perfected by imitation, imitation of exact utterances does not occur extensively beyond the child's third year. The older preschool child uses selective imitation by imitating the language structures he hears instead of the content. Early spontaneous production of language occurs which is neither in whole nor in part imitative ( Smith, 1971; Goodman, 1972; Whitehurst and Vasta, 1975). The majority of children have mastered the most basic fundamentals of grammar by the time they are four years old. Children entering the first grade have achieved a high degree of sophistication in oral language development (Ervin and Miller, 1963; Strickland, 1962). Listening is considered to be an integral part of language and a counterpart of speaking. Language not only allows for the transfer of thoughts and ideas to others but enables the individual to formulate new thoughts and ideas using previously learned vocabulary (Artly, 1950).

Language is characteristic of all cultures and because of this commonality and the seeming ease of acquisition, oral language fluency

has been considered to be a logical step in a developmental sequence of events that culminates in proficient reading and writing. Facility in oral language, especially in vocabulary knowledge and understanding of sentence structure, is a prerequisite for reading comprehension. Children learn the structure of oral language from listening, they learn many fine points of written language from reading. Elizabeth Yates (1962, p. 11) tells her young niece who has expressed a desire to be a writer: "You say that you like to read. That goes hand in hand with your desire to write, and will help you more than anything else."

Allen (1967) describes reading and writing as being "friendly neighbors" and suggests that the barriers between reading and writing are removed when writing and reading instruction are integrated into one program. He includes speaking and listening in a total instructional program to help children understand the speaking-reading-writing relationship which leads to a desire to do independent writing. He feels that once children internalize the concept that reading is speech written down they can move freely between the "two yards" and learn reading through writing.

The four aspects of language: listening, speaking, reading, and writing are interrelated; the degree and extent of interrelatedness is controversial. Listeners generate and reconstruct spoken language; readers also generate and reconstruct language on the three levels: phonetic, syntactic, and semantic (Ammon, 1975). Beginning readers usually possess more language competency than they will need for the curriculum met in the early primary grades. Newcomer and Magee (1977) found that children with reading problems are not as proficient in language as are children who read well. As a group the children with

reading problems were not linguistically impaired as their scores fell within the normal range. A significant portion of them did fall below the normal mean on oral tasks. This study suggests that poor readers possibly have to work harder to understand and use oral language and this might restrict their reading progress. This is speculative and is not based on any direct evidence that language deficiencies underlie or cause reading problems.

Both Loban (1963) and Strickland (1962) have shown that within the normal range that there is no significant relationship between oral language and reading achievement in the primary grades. However, a relationship between oral language and reading emerges in grades four through six. Loban suggests that this change is caused not by a change in the pupil but by a change in the texts and by the quantity and quality of reading done by the more able readers, usually beginning at about the third grade. He points to the rather abrupt change from overly simple language of primary readers to language that approximates adult language in the sixth grade texts. Blumenfeld and Miller (1966) suggest that older "A" and "B" students have more advanced knowledge about the passages they are reading; therefore, they have less to learn than those students who do not anticipate.

Most primary students through the third grade are still learning basic reading skills from books written in simplified language patterns with vocabularies inferior to that of the readers. The wide range reading period called the "smorgasbord" years by Belden (1977) takes place at the intermediate grade levels and is characterized by the reader sampling different types of reading material on many different subjects. It is during this time that it has been shown that a relationship

between language and reading abilities begin to emerge. Ray (1976) suggests that a basic language deficiency could be responsible for disabled reader's lack of progress beyond the elementary level and that this level reflects the outer limits of their language skills.

#### Purpose of the Study

In a recent study Tooker (1977) investigated the relationship of language ability and reading performance of able fourth and tenth grade readers and disabled tenth grade readers. She found that tenth grade readers reading at a fourth grade level possess language ability comparable to average seventh grade students. A review of the literature indicates that primary students generally have a working knowledge of all the fundamental structures of grammar and that a language deficiency is not usually a cause for reading failure in the early grades. The purpose of this study is to investigate the relationship between reading performance and language ability of fourth, sixth, and eighth grade able and disabled readers to see if a language deficiency does exist for disabled readers in the intermediate grades.

#### Objectives of the Study

This study is designed to identify significant relationships between thirteen measures of language abilities and four measures of reading performance of able and disabled readers at the fourth, sixth, and eighth grade levels. The grade level where the difference between the relationship between language ability and reading performance is greatest and the extent of that difference is to be determined. The measures of language ability include: a receptive vocabulary score

from the Peabody Picture Vocabulary Test; scores from the information, vocabulary, and comprehension subtests of the WISC-R; sentence length from the Dale-Chall Readability Formula; the number of words not found on the Dale List of 3,000 Familiar Words; and the ratio of T-Units per sentence, the ratio of subordinate clauses per T-Unit, the sentence length, the T-Unit length, and the clause length from the Syntactic Maturity Test. The four measures of reading performance are: the speed and accuracy subtests, the vocabulary subtest, and the comprehension subtest of the Gates-MacGinitie Reading Test used in this study (Borges and Meridith, 1976).

#### Definition of Terms

Disabled Reader - For the purpose of this study a disabled reader is one who has had the opportunity to learn to read but is not reading as well as is expected based on the formula that utilizes the number of years in school and IQ as reported by Bond and Tinker (1974). Readers with average intelligence are considered to be disabled when reading at the following levels: fourth graders reading .8 years below expectancy level; sixth graders reading 1.2 years below expectancy level; eighth graders reading 1.5 years below expectancy level (Wilson, 1977).

Able Reader - For the purpose of this study readers with at least average intelligence are considered to be able when reading at or above their expectancy level as determined by the Bond and Tinker formula. The reading levels were determined by the comprehension subtest of the Gates-MacGinitie Reading Test.

Receptive Vocabulary - The vocabulary words that are understood as measured by the Peabody Picture Vocabulary Test, form b.



Expressive Vocabulary - Words understood to the point that they are produced by the reader in written language as measured by the Dale-Chall Readability score and a Syntactic Maturity Test

Verbal Comprehension - The ability to understand and use language as indicated by the mean score of four subtests of the WISC-R determined by factorial analysis of the WISC-R subtests (Kaufman, 1975). Subtests of the WISC-R which represent verbal comprehension are: information, similarities, vocabulary, and comprehension (Kaufman, 1975, p. 138). Each of the subtests as well as the mean is considered to be a variable in this study.

Syntactic Maturity - The syntax of language is the rules that govern word patterns and structures of sentences. Syntactical maturity is then the chronological development of the ability to use such rules to generate language that approaches, or approximates, adult language as is reflected in a measure of syntactic maturity. Syntactic maturity is measured by the sentence length, T-Unit Length, clause length, ratio of T-Units to sentences, and the ratio of subordinate clauses to number of sentences.

Hunt's criteria for scoring the Instrument for Syntactic Maturity was used. Other studies probing syntactic maturity found that no significant differences existed between scores determined by three independent judges (Hunt, 1970; Tooker, 1977); however, to assure the accuracy of the scores obtained for this study two additional independent trained judges varified the scores.

### Limitations

The generalizability of this study is limited by the population which was confined to four school districts located in three counties in north central Oklahoma. Though the sample included a wide range of socio-economic levels, it is drawn from a small geographic area.

## CHAPTER II

### REVIEW OF THE LITERATURE

The literature selected to be reviewed was that which pertained to language skills as they relate to vocabulary, comprehension, and sentence structure of oral and written language as it is read and generated by children. These selected studies examined the relationship of general ability to use language form and function to reading achievement.

#### Studies That Show the Relationship Between General Language Ability to Reading Performance

Readability is a complex but necessary measure of reading material to be presented to students. The most commonly used readability formulas measure only two linguistic factors: vocabulary and syntactic complexity. The trend of later studies is to look for other ways to measure readability. The cloze method of assessing readability has been used with increasing frequency. The test is prepared by removing every fifth word in a passage and replacing it with a standard-sized blank. The reader is asked to fill in the blanks; only the deleted words are counted as being correct. Formulas using cloze scores as a criterion consistently yield high predictive validity coefficients. The cloze test of readability measures the amount of language competency the reader brings to the situation as well as that of the material. The

anticipation of what is to be read next is a large factor in proficient reading. Syntactic relations which are less familiar to the reader are more difficult to read (Glaserfeld, 1970; Klare, 1974; Granowsky and Botel, 1974; Bowers and Nacke, 1971-72).

Other studies have shown evidence that children better comprehend reading material that was written with language patterns that children frequently use. Strickland (1962), Ruddell (1963), and Tatham (1970) investigated reading comprehension of elementary school children by presenting them with written material that contained language patterns that were frequently used by children in their oral language and written material that contained language patterns that were infrequently used by children. The results showed that a significant number of children do comprehend material written with frequently used oral language patterns better than material written with infrequently used oral language patterns. Tatham (1970) included sex differences in her study and found a slight increase in comprehension of girls over boys in the same grade level but the difference was not significant.

Coleman (1962) tested ways and means of improving the comprehensibility of reading material. In one study he shortened sentences to make them easier to comprehend. He presented each subject with three sets of sentences, each set was a different length. The sentences were presented as a cloze test with every fifth word deleted. The longer sentences were understood more readily after they were divided into shorter sentences. The comprehensibility of shorter sentences that were shortened again was not improved. A detailed analysis of the sentences suggested that the overall effect may have been small because, although some classes of sentences almost always become more comprehensible when

shortened, other classes of sentences may not.

Coleman (1964) later compared the comprehensibility of different grammatical transformations. In two experiments, difficult prose was simplified by transforming nominalizations, adjectivalizations, and passives to their active-verb transforms.

The experiments supported the idea that some transformations are easier to comprehend than others. The last experiment suggested that transformations using active verbs are easier to comprehend than their nominalized counterparts.

In a subsequent study Coleman (1965) again checked nominalizations for ease of comprehension against their detransformed active-verb version, adjectivalizations against their detransformed adjective versions, and embedded against nonembedded sentences. The results paralleled his previous finding.

Slobin (1966) examined the ability of children and adults to comprehend active, passive, negative, and passive-negative sentences. Eight boys and eight girls were selected at each represented grade level. The grades chosen were kindergarten, second, fourth, sixth, and college students. The subjects were presented sets of pictures to which they were to judge the truth of the sentences that the pictures represented. The students were scored on errors and response time. Comprehension improved with age on the more complex sentences. Reaction times were shortest on true simple active sentences and became increasingly longer for passive, negative, and negative-passive. Performance was relatively stable for simple sentences at the second grade level. All subjects had more difficulty with negative sentences and some children would not accept any of the negative sentences as being true

statements about the pictures. The negative sentences posed more of a problem than did the passive sentences.

Another study investigating the comprehensibility of active and passive sentences was done by Layton and Simpson (1975) with sixteen students between the ages of 19 and 25 years serving as the subjects. The subjects were presented cards with from one to eight sentences printed on them. The subjects were given sufficient time to read the sentences and were told to try to commit them to memory. The correct responses and reaction time was recorded. Reaction time did not provide useful data. Subjects changed their strategies when memory load increased. For single sentences the sentences were more accurately recalled when the question matched the voice of the sentence. When memory load was light, subjects were able to remember the sentence in its surface structure. When memory load increases as in the four to eight sentence instances the errors are a result of the difficulty of the passive question alone. In this situation the subjects were forced to encode sentences in their deep structure representations. Passive questions were progressively more difficult to decode as the number of sentences to be remembered increased.

Holmes (1973) conducted experiments to see whether two-clause sentences are easier to perceive when the main clause occurs first or when the subordinate clause occurs first. The subjects were forty paid volunteers from the student body of the University of Melbourne. The subjects were presented words at a rate of twelve words per second and wrote the flashed sentences as they remembered them. Adverbials and noun-phrase complements were easier to perceive when the main clause occurred before the subordinate clause, the opposite effect was found for

relatives. Relatives were significantly easier when the subordinate clause divided the subject noun phrase from the predicate of the sentence.

Comprehension and semantic flexibility was examined by Barclay, Bransford, Franks, McCarrell, and Nitoch (1974) by using cued recall of familiar, unambiguous words as they varied with their sentential text. Four experiments were performed using college students as subjects. Ten pairs of sentences that varied only in the action described were presented orally to each subject. Different sets of sentences were used for each experiment. A cue list to help with recall of the sentences was read orally. The subjects were to write down the noun of which they were reminded by the cue. Subjects responded more accurately to cues that were appropriate and expected. The high incidence of recall of target nouns rather than verbs suggests that students remembered objects rather than actions.

Further investigations of sentence comprehension was conducted by Rothkopf (1963); Weaver, Kingston and Dinnan (1970-71). Various methods were used in the different studies.

Rothkopf (1963) looked at the effect of within sentence location on recall with uniform sentences. The sentences to be learned were limited to a short descriptive clause and a name like word. Each sentence was constructed so that the order of its two major components could be reversed without substantially changing the semantic intent of the sentence. Eight sentences were presented to 144 college students for studying, half of which contained familiar namelike nouns and half were unfamiliar. The students were divided into small groups for testing. The testing of recall of the sentences was done in five minute intervals

from acquisition time. The testing was done by having the subjects fill in the familiar or unfamiliar namelike noun. In both familiar and unfamiliar name sentences, objects were recalled most frequently, modifiers next most frequently, and verbs were recalled least often.

Based upon the assumption that the completion of a deleted language unit at a particular point in a sentence is based upon sequential, syntactical relations, Weaver, Kingston, and Dinnan (1970-71) designed a study for the purpose of measuring such relationships. They presented a group of forty college students with a set of ten sentences. One word was deleted from each sentence. Words deleted were nouns, adjectives, verbs, and adverbs, making all deletions lexical. The subjects were asked to supply all possible words they could think of that made sense in each deletion. The results showed that there was no difference in characteristics of a list after the first word was supplied, but that when categories changed the sentence had to be reviewed. The researchers believe then that both vertical constraints, indicated by the association effect, and horizontal constraints, represented by the sentence context are operating under these particular conditions. They also believe that a skilled reader does receive information from constraints of the sentences he reads.

Scarborough, Cortese, and Scarborough (1977) checked reaction time of 24 paid volunteers from an introductory psychology class. The subjects were presented 72 words of four letter strings. The word list included high-frequency words, low-frequency words, pronounceable nonwords and unpronounceable nonwords. The pronounceable nonwords followed legal spelling patterns while nonpronounceable words did not follow legal spelling patterns by having the vowel placed at the end of the



word or omitted altogether. Some of the words were repeated and some were not. The subjects responded by pushing a button marked word or nonword. The results indicated that there was a nonsignificant relationship of frequency by repetition and recency. The high frequency words were recognized with or without repetition while low frequency and nonwords were recognized more rapidly and accurately after the second repetition but reaction and accuracy were not affected by additional repetitions. The authors suggest that difference in orthographic and phonemic structure are also involved with the ease with which words are recognized.

Fishler (1977) investigated the ease of recognizing words with and without expectancy. The subjects were university students and staff. The subjects were presented pairs of letter strings from three to six letters long. The letter strings were classified as words and nonwords and the word pairs were associated and nonassociated. One half of the subjects were shown only associated word pairs for practice prior to beginning the test, the remaining half were shown both associated and nonassociated words and nonwords. The results showed that active anticipation seemed to be limited to predictions about the sequencing of positive and negative trials for explicit knowledge that some words in the series would be followed by associates and instructions to try to use this information to improve performance failed to produce any changes in the association facilitation. This indicates that associative facilitation will occur in a lexical decision task regardless of the particular expectation held by the subjects.

In an attempt to increase children's reading performance by increasing anticipation C. Chomsky used memorization to help these

remedial readers. She recorded textbooks and the children listened as they followed the recording in the books. The children were instructed to listen to their books every day, and listen to the whole book at least once. They could relisten to any part they wished. They could also record themselves reading along with the tape. Four of the children were not able to read their book independently until the 20th listening. This was approximately a month's work. One child was able to read his book fluently after only two weeks.

Isakson and Miller (1976) investigated the difference in readers who have word recognition skills commensurate with those of good readers but do not adequately comprehend the material read. They chose 48 fourth grade students as subjects. All 48 subjects had good word recognition skills; 24 were high comprehenders and 24 were low comprehenders. A set of sentences was presented to each subject. The sentence set contained: (1) a meaningful transitive sentence; (2) had a transitive verb substituted which made the sentence anomalous in meaning but did not violate any syntactic constraints; (3) had an intransitive verb substituted which violated semantic and syntactic constraints. The researchers found an interaction between comprehension level and sentence type with the indication that good reading comprehenders are sensitive to language constraints in sentences. This sensitivity is indicated by the increase of errors when violations of constraints are encountered. Poor comprehenders are not affected in their errors by semantic and syntactic violations. This would indicate that poor comprehenders do not use semantic and syntactic cues to integrate meanings of individual words but that they treat words as individual entities.

The inability of school age children to comprehend certain syntactic structures was also investigated by Richek (1976). The subjects were 102 third, fourth, and fifth grade students. The question being investigated was how performance on syntactic structures is affected by the complexity of the surrounding sentence. Two classifications of syntactic structures were tested in both simple and complex sentences. The students were given a booklet of seven test paragraphs. One set of booklets contained simple sentences, the other set contained complex sentences. The subjects were assigned to either the simple or complex situation. A question was answered after each paragraph was read. The results of this study indicated that there is not only a variation of how different children respond to simple and complex sentences, but how each child responded to different types of complex sentences. The physical separation of the complement clause from the noun was not pertinent as long as the subject of the clause was nearest to the complement. When this structure was violated, even ten year old children had problems identifying the subject of the complement. Richek (1976, p. 806) suggests that "Authors and Editors of children's books should be aware of the increasing difficulty encountered when several difficult structures are combined in a single sentence."

In an early study of pupil understanding of connectives in reading, Robertson (1968) checked this area of comprehension with fourth, fifth, and sixth grade students. The study was divided into three sections: (1) identification of various types of connectives and the kind of sentence structures in which they appear; (2) a connective reading test, and (3) analysis of results. The connectors tested were: however, thus, which, although, and yet. These connectors were taken from

basal texts. The results showed that fourth grade students understood 57 percent of the sentences that used connectives, fifth grade students understood 66 percent, and sixth grade students understood 75 percent. The author recommends additional training in connectives for elementary students.

In another study investigating the affects of syntactic and semantic constraints on reading performance, Siler (1973) found that syntax appeared to have a greater effect than semantics on oral reading performance. The subjects of the study were 84 children in grades two and four. Ten experimental words were used in sentences designated as: (1) control sentences where the word was presented in the medial position of a semantically and syntactically correct sentence; (2) semantically violated sentences where a word was used in the correct position in the sentence but did not convey the proper meaning; (3) syntactically violated sentences where a word is placed in the wrong word order or position; and (4) syntactically and semantically violated sentences where words of incorrect meaning are used in an incorrect position.

Siler found that: syntax appeared to have a greater effect than semantics on oral reading; the effects of violating syntax and/or semantic constraints were the same across grade levels.

Evans (1972) investigated the effect of transformational simplification on reading comprehension of high school students. The subjects were twelfth grade students who were reading between seventh and ninth grade level. The students were then matched with another student with the exact index score, creating 12 matched pairs--one half of the pair read the simplified version of the detransformed sentences while the

mate read the same passage in its unsimplified version. The transformations were like those of an eighth grade writer who is only beginning to write subordinate clauses. Comprehension was measured by a cloze test and a multiple choice test. The results indicated that problem readers will raise their comprehension by reading transformationally simplified prose.

Peltz (1973-74) tested the effect of repatterning passages on the reading comprehension of tenth grade students. He analyzed the written compositions of 34 tenth grade students who were asked to write one thousand words of prose dealing with social studies content. The writing was analyzed by the number of "T-units" to derive clause-to-sentence length factors. Each of the "T-units" generated was analyzed to quantify the frequency of use of fifty-one different transformations. Social studies text book passages were repatterned to more closely approximate the passages written by the students. Comprehension of the original and repatterned passages were checked with a cloze and multiple choice test. There was no significant difference in the number of correct responses to the multiple choice questions, but there were significant differences in the number of correct responses to cloze items taken from the repatterned passages.

Cromer and Wiener (1966) examined response patterns of good and poor readers to see if there was a difference in how visual cues were processed. The researchers hypothesized that:

New technical material is often more difficult to read because the reader may not have learned the pattern or sequence of words that tends to occur within the framework of a particular technical object. To read effectively there must be a matching or agreement between the cues available and the response characteristics of the individual. When no match is readily available or when there is a mismatch, reading will be less adequate (p. 10).

Twenty-four good readers and twenty-four poor readers in the fifth grade made more errors on compositions written in a here-and-now context than on compositions in a past-and-far away context. Only poor readers showed increases of errors for compositions which included affective content. The poor readers also made fewer consensual responses than did the good readers when asked to complete a story and on a word association task.

Riling (1965) compared oral and written language of children in grades four and six with language of their text books. The subjects were from three different school settings: (1) a medium sized city, (2) a rural area, and (3) a predominately black school. Since the language of the text books was in the narrative form so were the oral and written productions of the children.

The stimulus for writing was a colorful picture with enough details so that the uninventative could write if only to enumerate what was in the picture. A similar picture, but with a different subject, was used to elicit the oral response. Twenty-five responses were requested for both the oral and written situations; however, there was no minimum placed on the productions for Riling felt that the inability to produce the requested amount of language was important. The written material was analyzed for structures used and juncture errors. The oral narratives were transcribed from the recordings and divided into phonological units--determined by silence preceded by accent and a falling tone was regarded as terminal. The phonological unit segmented into communication units and holders (holders are ah's and uh's). The language of the text books was analyzed as nearly as possible on the first, tenth, twentieth, and fiftieth pages. All

types of language samples were analyzed for basic patterns (the basic patterns with movables were called structures or patterns). The second level of analysis intended to show how the elements of the first level were elaborated.

Riling (1965) found that children used "and" frequently to join two independent structures, one of which an adult would have subordinated. She explains that when used to introduce a phonological unit, "and" primarily produced rhythm in children's language.

General conclusions of this study are:

- (1) All children used all basic language structures.
- (2) Oral language extended narrations were characterized by short phonological units beginning with "and" rather than by long phonological units joined by "and."
- (3) The linking verb structure, usually considered a mark of maturity, was not used extensively by children who could do nothing more than enumerate the items in the stimulus pictures.
- (4) Children use the chief structures of language in a way that approaches that used by adults who write for nonfiction books, newspapers, magazines, etc. The chief difference is in the excess use of subject-direct object structure and the use of fewer linking verbs, and children used more structures with an expletive in grade four.
- (5) The children's writing shows that they are aware of the part that thought processes play in writing by using structures in written language that is not used in oral language.
- (6) Black children's language in grade six tends to be bookish, as is shown by their use of many phrases in the subject and

complement slots.

- (7) Sixth graders have made some advance structurally by showing a decrease in the use of unelaborated subject-predicate-direct object as well as showing an increase in movables of manner. They use a greater variety of structures, but have added no single pattern of subordination which can be isolated as typical of language of the sixth grade.
- (8) Both fourth and sixth grade students have developed a sense of organization of time shown by the increase in the use of the movable of time.
- (9) Children of rural communities write shorter sentences, use language less dexterously, and make lower grades on reading tests than do children of larger communities. They use speech holders less. (This is explained by the fact that rural children are less critical of their own language usage.)
- (10) The language of children is only slightly inferior structurally to that of their text books. It is much more structurally varied than that of the text books designed for slow readers. Text books use almost all of the most used language patterns of children's written language and use some structures not commonly found in children's language, especially in structures of dialogue. Text books use many more movables of manner than children do and more movables of time in order than the initial positions. None of the text books give attention to consistent development of sentence structure. Sixth grade books do not use language in a way which is much superior to that used in the fourth grade.



- (11) There is evidence that children may be influenced by text book language structures. The sixth grade children's superior use of dialogue is probably directly attributable to the influence of their reading text books or story books in general.
- (12) The superior education of mothers seems to have some influence upon a child's superior use of movables at the fourth grade level but not at the sixth.
- (13) There is no well defined dependence between the father's occupation and the child's use of language structure.
- (14) Children of both grades four and six who score high on a silent reading test of paragraph comprehension use more clauses in the subject and complement slots than children who make low scores.
- (15) Boys of the high quartile are generally superior to girls in their language structure but boys in the lower quartile are usually lower than girls.

Tooker (1977) investigated the relationship of language ability and reading performance of tenth grade disabled readers and able readers at the tenth and fourth grade levels. This study was specifically designed to see if language ability of disabled readers reflects their level of reading performance. The reading and language skills investigated were (1) silent reading comprehension, (2) vocabulary, (3) verbal comprehension, and (4) syntactic maturity. The subjects were 90 students; 30 able tenth grade readers, 30 disabled tenth grade readers, and 30 able fourth grade readers. Tooker drew four major conclusions from this study.

First, there is a strong link between reading and language skills beyond the elementary grades. Second, adolescent disabled readers are not as proficient in language skills assessed as able readers at the same grade level. Third,

developmental variations may exist in the magnitude and importance of the relationship between reading performance and specific language abilities at different stages of maturation and reading levels. Fourth, while the ability of disabled tenth grade readers is not limited to the same level as their reading performance, vocabulary and writing skills tend to level off at a grade level close to 7.0 (p. 76).

This information is shown in Appendix C, "Reading Group Patterns for Age and Grade-Age by Language Measures."

#### Summary

The literature reviewed indicated that for the most part school children have the language competencies necessary for the simplified narrative offered in the books adapted for use in the primary grades. At about the fourth grade level the differences of language abilities of the able and disabled readers was small but apparent. The differences of language abilities seemed to widen between the fourth and sixth grades and even more between sixth and tenth grade reading levels.

Researchers investigating the effects of expectancy on reading fluency and comprehension generally found that material was more easily read and understood when the reader was familiar with the language patterns of the written material. When order of words and clauses was also checked for its contribution to reading ease and comprehension, and it was found that words with familiar spelling patterns were more quickly recognized than those with unusual spellings. Clause order did not affect comprehension as long as the order did not violate expected syntactic constraints (Glaserfield, 1970; Klare, 1974; Coleman, 1962, 1964, 1965; Slobin, 1966; Holms, 1973; and Layton and Simpson, 1975).

Riling (1965) found that there was a relationship between language ability and reading skills. She found that language of sixth grade students in oral, and especially written form show the influence of their text books. Tooker (1977) found that able readers exhibit more proficiency in language, oral and written, than do disabled readers. She found that tenth grade readers reading on a fourth grade level had language abilities approximating that of seventh grade students. The question still exists, just where does the language ability of able and disabled readers exhibit the critical stage and degree of divergency.

### CHAPTER III

#### METHODS AND PROCEDURES

The purpose of this study is to determine if the language abilities of able and disabled fourth, sixth, and eighth grade readers are related to their reading performance.

The subjects for this study were selected from the fourth, sixth, and eighth grade students of four schools in four separate school districts in three counties located in north central Oklahoma. The approximate number of students per grade and the total school populations are shown in Table I.

TABLE I  
APPROXIMATE NUMBER OF STUDENTS PER GRADE

School	Students per Grade	School Population
Pleasant View	18	158
Perry	100	1,180
Drumright	40	520
Glencoe	20	260

These four schools were chosen for this study for reasons of proximity and the willingness of the schools' administrators to permit this study. Demographic records indicate that approximately three percent of the population sampled is Black, approximately five percent is Native American and other extraction, the remaining ninety-two percent is caucasian.

The sample for this study was composed of six groups of students; 30 able fourth grade readers; 30 disabled fourth grade readers; 30 able sixth grade readers; 30 disabled sixth grade readers; 30 able eighth grade readers; and 30 disabled eighth grade readers. All able and disabled readers were classified using the comprehension subtest of the Gates-MacGinitie Reading Test. The number of able readers meeting the criteria of this study was sufficient to allow random selection; however, the number of disabled readers was such that all who met the criteria were used. See Table II for the sample group description.

The following criteria were established for this study:

- (1) All students had not repeated a grade at the time of assessment.
- (2) All students placed within the average range of intelligence on a standardized test of nonverbal intelligence. Only those students with Deviation Intelligence Quotient scores of 84 or above on the nonverbal form of the Lorge-Thorndike Intelligence Tests were included in the sample.
- (3) Only those students from households where English is the first language were included in the sample.
- (4) Reading ability of all students was assessed by a standardized test of silent reading ability and each student's score fell within the following ranges: able fourth and sixth grade

TABLE II  
SAMPLE GROUP DESCRIPTION

Measure	Group	Mean RS	Mean St.S	SD(RS)	Grade Score	Age	
Age	4A			0.4822		9.7	
	4D			1.6586		9.4	
	6A			0.4803		11.6	
	6D			0.7895		11.8	
	8A			0.4696		13.6	
	8D			0.4826		13.6	
	DIQ	4A	114.4333		9.5761		
		4D	101.0333		10.9402		
6A		112.2069		8.3725			
6D		102.0333		9.8278			
8A		115.7000		13.6006			
8D		108.2000		13.6341			
COGM		4A	39.6887	54	4.1417	6.1	
		4D	20.1667	38	7.0910	3.1	
	6A	46.4138	63	3.1341	8.8		
	6D	28.5333	45	9.0848	4.1		
	8A	44.5000	59	3.0934	11.0		
	8D	29.0567	42	5.9477	6.0		

DIQ--Deviation Intelligence Quotient

COGM--The Comprehension Subtest of the Gates-MacGinitie Reading Test

readers performing at their expectancy level as determined by the Bond and Tinker Formula and a score on the comprehension subtest of the Gates-MacGinitie Reading Test, Survey D form 2; eighth grade able readers performing at their expectancy level or above as measured by the comprehension subtest of the Gates-MacGinitie Reading Test, Survey E form 2. Disabled fourth grade readers performing .8 years below expectancy; sixth grade readers performing 1.2 years below expectancy level; and eighth grade readers performing 1.5 years below expectancy level (Wilson, 1977).

- (5) All students completed all tests included in the battery.
- (6) Permission was obtained for testing.

#### Testing Procedures

The following tests were administered to the subjects in random order, by qualified examiners, between the dates of March 8 and May 2, 1978.

- (1) Gates-MacGinitie Reading Test, Survey D2, E2, and C2. Arthur Gates and Walter H. MacGinitie (1972-1965),
- (2) Lorge-Thorndike Intelligence Tests, Nonverbal battery, levels 3 and 4, Irving Lorge and Robert L. Thorndike (1957),
- (3) Peabody Picture Vocabulary Test, Form B, Lloyd M. Dunn (1965),
- (4) Wechsler Intelligence Scale for Children-Revised, verbal scale, David Wechsler (1974),
- (5) Instrument to Measure Syntactic Maturity, Kellogg W. Hunt (1969),
- (6) A free-writing passage was elicited from the students by their classroom teachers or a qualified examiner. The Formula for

Predicting Readability, Edgar Dale and Jeanne Chall (1948), was applied to each passage.

All group tests at the fourth and sixth grade levels were administered during reading classes and all group tests at the eighth grade level were administered during reading or science classes. The science class was used for screening one school because it was the only time when the class was composed entirely of eighth graders. Students were removed from the classrooms for the individually administered tests: Peabody Picture Vocabulary Test, the Wechsler Intelligence Scale for Children-Revised. These tests were administered in rooms as free from distraction as was possible in a public school setting. All students were informed of the nature and purpose of the testing and were assured that all scores would be held confidential.

Survey C2 of the Gates-MacGinitie Reading Test was given to those fourth grade students who fell below the norms of form D2. This was to insure that disabled readers were not eliminated from the study because of improper assessment.

#### Test Instruments

##### Gates-MacGinitie Reading Test Survey C, D, and E

This test is a standardized test which gives three measures of reading ability; speed and accuracy, vocabulary, and comprehension. The comprehension section was selected to measure the student's ability to comprehend a passage of prose and will be the criterion measure for assigning reading levels of the students so they may be grouped. Each comprehension section contains 21 passages of increasing difficulty. A total of 52 blanks are to be filled in by selecting the



appropriate answer from five words provided.

The test of speed and accuracy measures how rapidly the student reads and understands sentences. This test presents 36 short paragraphs of approximately the same length and difficulty; each paragraph is accompanied by four words, one of which will correctly complete a statement or answer a question. The time limit for this portion of the test is set such that few students will complete all paragraphs. The score is reported as number attempted and number correct.

The vocabulary portion samples the student's reading vocabulary. The test contains 50 items; each to be matched with a word of similar meaning in a group of five words. The items range from easy and commonly used words to less commonly used and harder words.

The validity of the test is based on the curriculum of selected schools that officials adjudicated to be representative of the community as a whole. The following average alternate form reliabilities were reported for levels C, D, and E respectively: .81, .86, and .80 for the vocabulary test; .84, .86, and .80 for the comprehension test; and .76, .78, and .74 for number attempted, and .72, .78, and .74 for speed and accuracy number correct.

The Gates-MacGinitie Reading Tests were standardized on approximately 40,000 students in a nationwide sampling. Two forms of the test were alternately distributed to the students. Each student took first the survey form designed for his own grade level and then took either another form designed for his own grade level of the same level or a survey level designed for the grade above or below his own. This was done to establish the grade norms of two-thirds of each subsample.

### Lorge-Thorndike Intelligence Tests

#### Nonverbal Battery, Levels 3 and 4

This test was used as a screening instrument for the sample selection and the resulting scores are used as the source of mental ages. The nonverbal battery was chosen as it furnishes an estimate of scholastic aptitude that is divorced from the ability to read. The test contains three subtests all of which consist of iconic and numerical items: pictorial classification, pictorial analogy, and numerical relationships.

Since the Lorge-Thorndike Intelligence Tests are designed to measure reasoning ability, the content validity is hard to evaluate. The nonverbal battery correlates with other group intelligence tests as high as .84. The tests were normed on over 136,000 children from a stratified nationwide sample.

#### Peabody Picture Vocabulary Test Form B (PPVT)

This test assesses the receptive or listening vocabulary and was designed to estimate intelligence as indicated by a mental age score. It is administered individually by presenting the subject with a stimulus word and a group of four pictures. The subject chooses the picture that more nearly reflects the meaning of the stimulus word. Both the stimulus word and the iconic association increases in difficulty as the test progresses. The test is discontinued when the subject incorrectly matches six of eight presentations. The established norms are for two to eighteen years.

The test was standardized on 4,000 middle class white children in Nashville, Tennessee. The reported validity correlation with the Stanford Binet (1960) test was .83. In this study the Peabody Picture

Vocabulary Test will be used to measure the receptive vocabulary of the different reading groups.

Wechsler Intelligence Scale for Children-  
Revised (WISC-R)

The Wechsler Intelligence Scale for Children-Revised is widely used to individually measure intelligence of children of ages 6-0 to 16-11 years. The twelve subtests are combined to give scores of verbal ability, performance and comprehension.

In a factor analysis of the WISC-R (Kaufman, 1970) it was found that three factors were independent contributors to general intelligence. The three major categories analyzed were verbal comprehension, perceptual organization, and freedom from distractability. Verbal comprehension was shown to be the best measure of general intelligence; the subtests included in this category were information, similarities, vocabulary, and comprehension. Using this striation the contribution of language ability to general intelligence can be evaluated separately from other factors of intelligence for each person. To find the verbal comprehension score the scaled scores for the four verbal subtests are averaged.

The WISC-R is a revised version of the earlier WISC (1949). The standardization group consisted of over 2,000 subjects nationwide.

The following selected subtests of the WISC-R were administered to all subjects selected for the sample groups. All subtests were presented in order of presentation in the manual and were responded to orally.

Information. This subtest contains 30 questions of increasing difficulty. The questions require general facts that are learned

either in school or from experience. The average reliability coefficient across age groups for this subtest is .85.

Similarities. This subtest contains 17 pairs of words of increasing difficulty; each pair of words has at least one attribute in common. The subject is to verbalize the relationship of each pair. This exercise measures the ability to see abstract associations and also measures logical and abstract thinking. The average reliability coefficient across age groups is .81.

Vocabulary. This subtest is a list of 32 words of increasing difficulty. The words are to be defined by the subject. It measures word knowledge and the ability to use oral language. The average reliability coefficient across age groups is .86.

Comprehension. This subtest is a series of 17 situations in question form that require common sense, reasoning, and moral judgment to answer. It reflects the subject's knowledge of correctness of social judgment and acceptable standards of behavior. The average reliability coefficient across age groups is .77.

#### Instrument for the Measurement of

#### Syntactic Maturity

This is a test developed by O'Donnell et al. (1967) and Hunt (1968) to study the differences in how students at different chronological maturity used syntactic structure in written language. The subjects were students in grades four, six, eight, ten, twelve, and skilled adults. The students in grades four, six, eight, ten, twelve, and the skilled adults were classified as to mental ability and divided into

three levels for each group. The test was normed on approximately 250 students in Tallahassee, Florida who were chosen as having normal academic achievement.

In order to circumvent the problem of defining a sentence that was not punctuated properly, Hunt (1968) conceived the "minimal Terminal Unit" or "T-Unit" as being the shortest grammatical segment that can be punctuated without creating fragments. He found that the number of "T-Units" used by students is related to syntactic maturity.

The test incorporates 32 sentences all of which relate to the same subject. The sentences are each composed of a single clause. They are deliberately written in a short choppy manner so the students are given every opportunity to combine them in more mature transformations. The students were each given a copy of the sentences with instructions to rewrite in a better way without changing any of the meaning. Hunt made a qualitative and quantitative analysis of the rewritten sentences; this study used only the quantitative analysis of sentence structure as a measure of syntactic maturity.

The following five ratios or synopsis scores of clause to sentence factors were figured for each passage.

- (1) Sentence Length (SLSM). The mean number of words per sentence has been traditionally used as a simple measure of language maturity. Sentence length is no longer considered a reliable index of language maturity because of the habitual use of run on sentences of younger children (Strickland, 1962; Loban, 1965; Hunt, 1966). Hunt (1968) did find some relationship between sentence length and language maturity in older students.

- (2) Main Clause Coordination Index (MCLI). Younger children string clauses together with "and's," "but's," commas, or with nothing. Hunt (1970) found that there was a decrease in coordination of main clauses at each successively higher grade level. Hunt's 1970 study clearly indicated that the more able students coordinated main clauses less often than did the less able students.
- (3) "T-Unit" Length (TUSM). Hunt (1970) defines the "T-Unit" as "one main clause plus any subordinate clause or non-clausal structure that is attached to or embedded in it." He found that T-Unit length increased with age and with ability within grade. Hunt considers "T-Unit" length a more reliable index of syntactic maturity than sentence length.
- (4) Subordinate Clause Index (SCLI). This is the ratio of all clauses to the main clause. Hunt found that the ratio increases rapidly from grades four to six to eight but leveled off from grades eight to ten to twelve.
- (5) Clause Length (CLSM). Although the developmental growth in clause length was slow, Hunt (1970) found that there was a significant increase at every grade level and among ability groups. He found that clause length as measured by this instrument was not closely related to chronological age and grade-age level. See Appendix A for the instrument for Syntactic Maturity and Appendix B for Hunt's scoring criteria.

### Free Writing Samples

The students participating in this study were asked to write essays of approximately 100 words on such subjects as "What I Like to Do on Saturday" and "What I Plan to Do During Summer Vacation." As much time as an hour was allotted for compositions with most participants finishing in much less time. The subjects were assured that spelling errors would not be tallied. The Dale-Chall Readability Formula was used to find the number of hard words used by the subjects in their free writing.

The Dale-Chall Readability Formula (1948) was designed to estimate the reading level of material above the 4.0 grade level. The primary assumption of the readability factors of material is that mean sentence length and familiarity of the vocabulary of the text are determiners of readability of material. In the present study the Dale Score (number of words not found on the Dale List of 3,000 Familiar Words) are called hard words and were used as an index to see if a relationship exists between maturity of vocabulary usage and reading performance for each reading group.

### Statistical Analysis

Statistical analysis was conducted through the Bureau of Tests and Measurements at the Oklahoma State University Computer Center using an IBM system 370/158 computer.

### Relationships of Language Abilities

#### Within Reading Groups

To meet the objective of identifying significant relationships

between the four measures of reading performance and the thirteen measures of language ability at each grade level, the Pearson product-moment correlations were computed between reading comprehension scores and all other variables within each subject group.

The following formula for computing the Pearson correlation coefficients was utilized in accordance with the computer program Statistical Package for the Social Sciences (SPSS), Nie et al. (1975).

$$r = \frac{\sum_{i=1}^N X_i Y_i - (\sum_{i=1}^N X_i) (\sum_{i=1}^N Y_i) / N}{\left[ \sum_{i=1}^N X_i^2 - (\sum_{i=1}^N X_i)^2 / N \right] \left[ \sum_{i=1}^N Y_i^2 - (\sum_{i=1}^N Y_i)^2 / N \right]^{1/2}}$$

Tests of significance using Students t were computed for each coefficient.

$$t = \frac{r - \sqrt{\frac{N-2}{1-r^2}}}{\sqrt{1-r^2}}$$

Fisher's Z transformation was used to determine possible differences in the degree of relationship of language ability to reading performance for each subject group. The following formula from Bruning and Kintz (1968, p. 191) was used.

$$Z_r = \frac{1}{2} \left[ \log_e (1 + r) - \log_e (1 - r) \right]$$



## CHAPTER IV

### ANALYSIS OF THE DATA

#### Introduction

This chapter is divided into two sections, the first section is concerned with the relationship of the four measures of reading performance and thirteen measures of language abilities of able and disabled readers at the fourth, sixth, and eighth grade levels. The second section of this chapter deals with the extent of differences between the relationships of reading performance and language ability between each sample group. The four measures of reading performance are the four subtests of the Gates-MacGinitie Reading Test; the four measures of verbal comprehension of the WISC-R--information, similarities, vocabulary, and comprehension; the mean verbal comprehension score from the Kaufman factor analysis of the WISC-R; sentence length and number of hard words from the Dale-Chall Readability Formula and The Dale List of 3,000 Familiar Words; sentence length, T-Unit length, clause length, ratio of T-Units per sentence, and ratio of subordinate clauses per T-Units from the Syntactic Maturity Test.

Tables III, IV, and V report the means, standard deviations, grade and age scores for groups by measurement categories for the six sample groups.

TABLE III  
 MEANS, STANDARD DEVIATIONS, GRADE AND AGE SCORES  
 FOR GROUPS BY MEASUREMENT CATEGORIES  
 FOR FOURTH GRADE GROUPS

Measure	Group	Mean RS	Mean St. S	Mean SS	SD(RS)	Grade Score	Age Score
Vocabulary	GMGM	4A	39.8667	52	4.1417	6.1	
		4D	20.1667	36	7.0910	3.1	
	ATGM	4A	16.4667	50	4.7301	4.8	
		4D	20.7333	55	8.7963	6.3	
	GRGM	4A	15.9667	48	4.5142	5.2	
		4D	16.1667	49	14.3649	5.2	
	VOGM	4A	31.2333	52	4.8614	5.8	
		4D	21.2000	41	6.1218	4.0	
	PPVT	4A	116.6333			14.8475	18.0
		4D	94.0667			19.8632	13.8
Verbal Comprehension	HWDC	4A	1.4000	4.38	1.4762		
		4D	1.9000	5.23	1.6474		
	VOWR	4A	32.7	12.03	2.1891		11.4
		4D	26.67	11.50	13.0879		9.4
	LNWR	4A	15.8	11.97	2.5795		11.4
		4D	13.0	11.43	9.3870		10.0
	SMWR	4A	13.76	11.03	2.9651		11.4
		4D	11.33	9.13	2.1129		9.8
	COWR	4A	18.63	11.70	2.8424		11.4
		4D	16.47	10.13	1.8705		10.0
Syntactic Maturity	VCWK	4A		14.63	14.8740		11.4
		4D		9.50	1.5369		9.8
	SLDC	4A	14.7167		6.8486		
	wd/sen	4D	29.9687		31.9132		
	SLSM	4A	7.5730		3.4118	4.0	
	wd/sen	4D	7.0013		2.6330	4.0	
	MCLI	4A	1.5453		0.6057	4.0	
	T-U/sen	4D	1.3860		0.5590	4.0	
	SCLI	4A	1.0513		0.7680	4.0	
	sc/T-U	4D	1.0407		0.2797	4.0	
T-U1	4A	5.0747		0.8512	4.0		
T-U/sen	4D	4.8473		0.5664	4.0		
CLI	4A	4.9347		0.8372	4.0		
cl/sen	4D	4.6403		0.7144	4.0		

TABLE IV  
 MEANS, STANDARD DEVIATIONS, GRADE AND AGE SCORES  
 FOR GROUPS BY MEASUREMENT CATEGORIES  
 FOR SIXTH GRADE GROUPS

Measure	Group	Mean RS	Mean St.S	Mean SS	SD(RS)	Grade Score	Age Score	
Vocabulary	CMGM	6A	46.4238	64		3.1341	8.8	
		6D	28.5333	43		9.0848	4.1	
	ATGM	6A	25.2414	58		5.0402	8.8	
		6D	19.3333	52		5.3615	5.8	
	CRGM	6A	24.7586	64		4.9328	10.7	
		6D	17.6000	53		5.8875	5.5	
	VOGM	6A	36.8793	59		7.6993	7.6	
		6D	28.7333	48		7.6741	5.0	
	PPVT	6A	114.2414			14.8475		18.0
		6D	95.0333			19.8632		13.11
	HWDC	6A	4.1752		4.95	16.5016		
		6D	3.2667		4.89	3.5809		
Verbal Comprehension	VOWR	6A	37.3000		10.66	1.4947	12.8	
		6D	31.6700		10.50	11.4101	11.4	
	INWR	6A	19.53		11.79	2.9079	13.4	
		6D	14.57		8.33	1.9179	11.0	
	SMWR	6A	18.00		11.72	2.9386	12.4	
		6D	14.67		9.08	2.8519	11.8	
	COWR	6A	22.83		11.62	3.0168	13.8	
		6D	19.37		8.86	2.6823	11.0	
	VCWK	6A			11.45	2.1207	13.1	
		6D			8.66	1.6987	11.2	
	Syntactic Maturity	SLDC wd/sen	6A	16.9893			16.5016	
			6D	18.8380			18.6026	
SLSM sd/sen		6A	8.9817			2.1169	6.0	
		6D	10.6080			5.5481	6.0	
MCLI T-U/sen		6A	1.1879			0.1760	6.0	
		6D	1.1027			0.3659	6.0	
SCLI c1/sen		6A	1.1879			0.1760	6.0	
		6D	1.1027			1.0525	6.0	
T-UL T-U/sen		6A	6.1424			1.1847	6.0	
		6D	5.0550			0.8091	4.0	
CLI c1/sen		6A	5.5034			0.6140	6.0	
		6D	4.7900			0.7200	6.0	

TABLE V  
 MEANS, STANDARD DEVIATIONS, GRADE AND AGE SCORES  
 FOR GROUPS BY MEASUREMENT CATEGORIES  
 FOR EIGHTH GRADE GROUPS

Measure	Group	Mean RS	Mean St.S	Mean SS	SD(RS)	Grade Score	Age Score
Vocabulary	CMGM	8A	44.5000	56	3.0934	11.0	
		8D	29.0567	41	5.9477	6.0	
	ATGM	8A	20.9333	58	4.5177	11.5	
		8D	15.4333	48	3.6830	7.7	
	CRGM	8A	19.9333	60	4.3544	11.7	
		8D	13.7333	47	3.8857	8.0	
	VOGM	8A	31.2333	52	4.8614	11.3	
		8D	21.2000	41	6.1218	7.3	
	PPVT	8A	116.6333			14.8475	18.0
		8D	94.0667			19.8632	13.8
Verbal Comprehension	HWDC	8A	7.3940	5.49	8.6254		
		8D	3.9000	4.85	2.2308		
	VOWR	8A	43.77	11.37	2.4980		14.8
		8D	33.80	8.33	1.9885		11.8
	INWR	8A	22.50	12.03	2.4703		16.8
		8D	16.40	11.14	4.7424		11.8
	SMWR	8A	18.63	10.70	2.7310		15.0
		8D	15.50	8.43	2.5622		11.8
	COWR	8A	24.77	10.67	1.8600		15.4
		8D	20.98	8.66	2.1000		11.8
Syntactic Maturity	VCWR	8A		11.11	1.6605		15.5
		8D		8.70	1.7085		11.8
	SLDC	8A	14.5897		5.0353	8.0	
	wd/sen	8D	14.7743		5.9257	8.0	
	SLSM	8A	10.8177		2.3051	8.0	
	wd/sen	8D	11.2663		4.4820	8.0	
	MCLI	8A	1.5183		1.6090	6.0	
	T-U/sen	8D	1.4107		2.2573	4.0	
	SCLI	8A	1.4143		0.2500	8.0	
	sc/sen	8D	1.4107		0.7277	8.0	
T-UL	8A	8.7880		1.2845	8.0		
T-U/sen	8D	7.6817		1.7592	8.0		
CLI	8A	6.2663		0.8021	AVAD		
cl/sen	8D	8.1340		9.6727	10.0		

Relationship Between Language Abilities  
and Reading Performance of  
Fourth Grade Readers

The measure of reading performance that exhibits the largest number of significant relationships between measures of language ability at the fourth grade level is the subtest, vocabulary, from the Gates-MacGinitie Reading Test for the able group. This measure of reading performance shows significant relationships at the .01 level of confidence between the subtests, vocabulary and comprehension of the WISC-R and the number of hard words from the Dale List of 3,000 Familiar Words. The number of hard words are those words used by the subjects in the free writing samples that are not found on the Dale List of 3,000 Familiar Words. This measure of language ability is significantly related to the measures of reading performance, vocabulary and comprehension for the able fourth grade readers at the .01 level of significance. This measure of language ability is not significantly related to any other measure of reading performance for any other reading group. Significant relationships at the .05 level of confidence are the correlations between the subtests of the WISC-R, similarities and the ratio of T-Units per sentence of the Syntactic Maturity Test at the able fourth grade reading level. The measure of reading performance with the next largest number of significant relationships between measures of language ability is the subtest, comprehension, of the Gates-MacGinitie Reading Test. The reading comprehension subtest shows significant relationships at the .01 level of confidence between the measures of language ability: the vocabulary subtest of the WISC-R; as well as the number of hard words of the Dale List of 3,000 Familiar Words.

Significant relationships between the reading comprehension subtest and language subtests at the .05 level of confidence are: the subordinate clause index and the T-Unit length of each subsample.

There are four significant relationships between reading and language variables for disabled fourth grade readers. There is a significant relationship between the measures of language ability, the verbal comprehension score of the Kaufman factor analysis of the WISC-R and the similarities and comprehension subtest of the WISC-R and the measure of reading performance subtest, vocabulary, of the Gates-MacGinitie Reading Test at the .01 level of confidence. There is also a significant relationship between the measure of reading performance, comprehension of the Gates-MacGinitie Reading Test and the measure of language ability, the verbal comprehension score of the Kaufman factor analysis of the WISC-R at the .05 level of confidence.

Table VI shows the Pearson correlation coefficients and the variances for able fourth grade readers. Table VII shows this information for fourth grade disabled readers.

Relationship Between Language Abilities  
and Reading Performance of  
Sixth Grade Readers

Three of the subtests of the Gates-MacGinitie Reading Test used to measure reading performance show significant relationships between seven different subtests used to measure language ability for a total of eight significant relations for able sixth grade readers. There are significant relationships between the reading variable, the comprehension subtest of the Gates-MacGinitie Reading Test, and the language variables,

TABLE VI  
 RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
 BETWEEN SILENT READING PERFORMANCE AND  
 LANGUAGE ABILITIES FOR ABLE  
 FOURTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.18	.03	.27	.07	.43*	.19	.25	.06
INWR	.14	.04	.20	.04	.17	.03	.27	.08
SMWR	.27	.07	.25	.06	.46*	.21	.10	.01
VOWR	.02	.00	.11	.01	.58**	.34	.51**	.26
COWR	.16	.02	.07	.01	.56**	.31	.21	.04
VCWK	.29	.08	.24	.11	.03	.00	.08	.01
SLDC	.37*	.13	.31	.10	.07	.01	.09	.01
HWDC	.26	.07	.31	.10	.60**	.36	.47**	.22
MCLI	.09	.01	.18	.03	.36*	.13	.29	.09
SCLI	.55**	.30	.60**	.36	.22	.05	.38*	.15
TUSM	.37*	.13	.42*	.18	.14	.02	.45*	.20
SLSM	.01	.00	.04	.00	.03	.00	.17	.03
CLSM	.36	.13	.28	.08	.17	.03	.30	.09

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted;  
 CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/Information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman factor analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length

TABLE VII  
RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
BETWEEN SILENT READING PERFORMANCE AND  
LANGUAGE ABILITIES FOR DISABLED  
FOURTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.11	.01	.11	.01	.07	.00	.14	.02
INWR	.03	.00	.11	.01	.01	.00	.08	.01
SMWR	.18	.03	.13	.01	.46*	.21	.26	.07
VOWR	.03	.00	.07	.01	.06	.00	.09	.01
COWR	.15	.02	.13	.01	.37*	.14	.26	.07
VCWL	.08	.01	.25	.06	.53**	.28	.38*	.14
SLDC	.00	.00	.12	.01	.24	.06	.08	.01
HWDC	.02	.00	.22	.05	.17	.03	.26	.07
MCLI	.09	.01	.06	.00	.01	.00	.19	.03
SCLI	.08	.01	.04	.00	.03	.00	.07	.01
TUSM	.25	.06	.18	.03	.10	.01	.10	.01
SLSM	.10	.01	.03	.00	.10	.01	.11	.01
CLSM	.18	.04	.17	.03	.12	.01	.04	.00

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted;  
CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/Information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman factor analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length



the WISC-R subtests vocabulary and comprehension at the .01 level of confidence. The relationship is significant at the .05 level of confidence between the reading subtest, comprehension, and language subtest of the WISC-R, similarities and the verbal comprehension score of the Kaufman factor analysis of the WISC-R. There is a significant relationship between the measure of reading performance subtest, vocabulary of the Gates-MacGinitie Reading Test and the Peabody Picture Vocabulary Test at the .01 level of confidence and the WISC-R subtests, information and similarities at the .05 level of confidence. There is a significant relationship between the scores on the measure of reading performance, the subtest, number attempted, of the Gates-MacGinitie Reading Test, and the scores on the measure of language ability, the clause length subtest of the Syntactic Maturity Test, at the .05 level of confidence.

There are nine significant relationships between scores on measures of reading performance and scores on measures of language ability for disabled sixth grade readers. There is a significant relationship between the scores on the measure of reading performance subtest, vocabulary of the Gates-MacGinitie Reading Test, and the scores on measures of language ability; the Peabody Picture Vocabulary Test, and the verbal comprehension scores of the Kaufman factor analysis of the WISC-R and T-Unit length of the Syntactic Maturity Test at the .01 level of confidence. At the .05 level of confidence, the vocabulary subtest of the Gates-MacGinitie Reading Test shows a significant relationship between the measures of language ability, the subtests of similarities and comprehension of the WISC-R. There is a significant relationship between the scores on the measure of reading performance subtest, number correct

on the Gates-MacGinitie Reading Test and the scores on the Peabody Picture Vocabulary Test at the .01 level of confidence and the scores on the measure of language ability, the verbal comprehension scores of the Kaufman factor analysis of the WISC-R at the .05 level of confidence. At the .01 level of confidence there is a significant relationship between the scores on the measure of reading performance subtest, number attempted and the Peabody Picture Vocabulary Test; at the .05 level of confidence, the comprehension subtest of the WISC-R. At the .01 level of confidence there is a significant relationship between the scores on the measures of reading performance, number attempted, and the Peabody Picture Vocabulary Test; at the .05 level of confidence the scores on the measure of language ability, the comprehension subtest of the WISC-R.

Table VIII shows the Pearson correlation coefficients and the variances for able sixth grade readers. Table IX shows this information for disabled readers.

Relationship Between Language Abilities  
and Reading Performance of Eighth  
Grade Readers

The measure of reading performance, the subtest, comprehension of the Gates-MacGinitie Reading Test, shows significant relationships between five of the fifteen significant relationships reported for able eighth grade readers. These five significant relationships are: at the .01 level of confidence, the scores on the measure of language ability WISC-R subtest, vocabulary, and the verbal comprehension score on the Kaufman factor analysis of the WISC-R; at the .05 level of

TABLE VIII  
 RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
 BETWEEN SILENT READING PERFORMANCE  
 AND LANGUAGE ABILITIES FOR ABLE  
 SIXTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.11	.01	.17	.03	.53**	.28	.34	.12
LNWR	.24	.06	.24	.06	.44*	.20	.36	.13
SMWR	.21	.04	.25	.06	.14	.02	.46*	.21
VOGM	.22	.05	.24	.06	.14	.02	.46*	.21
COWR	.13	.02	.15	.02	.27	.07	.46*	.21
VOWR	.24	.06	.26	.07	.41	.17	.50**	.26
SLDC	.14	.02	.17	.03	.16	.03	.25	.06
HWDC	.04	.00	.04	.00	.10	.01	.05	.00
MCLI	.06	.00	.02	.00	.25	.06	.24	.06
SCLI	.14	.02	.15	.02	.03	.00	.02	.00
TUSM	.13	.02	.09	.01	.16	.02	.11	.01
SLSM	.01	.00	.03	.00	.22	.05	.18	.03
CLSM	.38*	.14	.34	.12	.23	.05	.35	.13

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted;  
 CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length

TABLE IX  
RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
BETWEEN SILENT READING PERFORMANCE AND  
LANGUAGE ABILITIES FOR DISABLED  
SIXTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.56**	.32	.59**	.35	.60**	.36	.35	.12
INWR	.11	.01	.26	.07	.38*	.15	.01	.00
SMWR	.26	.07	.29	.08	.32	.10	.32	.10
VOWR	.09	.01	.09	.01	.03	.00	.08	.00
COWR	.37*	.15	.30	.09	.35	.12	.26	.07
VCWK	.29	.08	.39*	.15	.60**	.36	.37*	.14
SLDC	.27	.07	.28	.08	.27	.07	.06	.00
HWDC	.03	.00	.05	.00	.01	.00	.07	.00
MCLI	.00	.00	.07	.00	.05	.00	.21	.05
SCLI	.15	.02	.23	.05	.15	.02	.16	.02
TUSM	.14	.02	.19	.04	.53**	.28	.31	.09
SLSM	.05	.00	.14	.02	.10	.01	.29	.08
CLSM	.02	.00	.07	.00	.13	.02	.04	.00

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted;  
CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman factor analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length

confidence the WISC-R subtests information, similarities, and comprehension. The scores on measures of reading performance subtests, number attempted and number correct, show significant relationships at the .05 level of confidence between measures of language ability subtests of the WISC-R, similarities, vocabulary, and comprehension. At the .01 level of confidence there is a significant relationship between these two measures of reading performance and the measure of language ability, the scores on the Kaufman factor analysis of the WISC-R. There is a significant relationship between the measure of reading performance, the vocabulary subtest on the Gates-MacGinitie Reading Test and the measure of language ability, vocabulary, of the WISC-R and the sentence length of the Syntactic Maturity Test.

There is a significant relationship between the scores on the measure of reading performance, the vocabulary subtest of the Gates-MacGinitie Reading Test, and the subtests of the WISC-R, vocabulary and comprehension; the verbal comprehension score on the Kaufman factor analysis of the WISC-R; and the subordinate clause index of the Syntactic Maturity Test at the .05 level of confidence for the disabled eighth grade group. There is also a significant relationship between the scores on measures of reading performance subtests, number attempted and number correct, of the Gates-MacGinitie Reading Test and the WISC-R subtest, vocabulary, at the .05 level of confidence for the disabled eighth grade reading group.

Table X gives the Pearson Correlation coefficients and variances for able eighth grade readers and Table XI shows this information for disabled eighth grade readers. Table XII summarizes the Pearson correlation coefficients for able and disabled fourth, sixth, and eighth

TABLE X  
RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
BETWEEN SILENT READING PERFORMANCE  
AND LANGUAGE ABILITIES FOR ABLE  
EIGHTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.17	.03	.20	.04	.33	.11	.23	.05
INWR	.40*	.15	.40*	.15	.16	.02	.37*	.14
SMWR	.08	.01	.10	.01	.36	.13	.40*	.16
VOWR	.41*	.17	.43*	.19	.31	.11	.57**	.32
COWR	.41*	.17	.41*	.17	.34	.11	.43*	.19
VCWK	.49**	.24	.50**	.25	.46*	.21	.69**	.49
SLDC	.06	.00	.06	.00	.24	.06	.19	.03
HWDC	.14	.02	.12	.02	.30	.09	.29	.09
MCLI	.21	.04	.18	.03	.02	.00	.17	.03
SCLI	.07	.01	.02	.00	.31	.10	.06	.00
TUSM	.10	.01	.18	.03	.34	.12	.27	.07
SLSM	.19	.03	.21	.04	.38*	.14	.28	.08
CLSM	.01	.00	.04	.00	.12	.01	.04	.00

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted; CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman factor analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length

TABLE XI  
RESULTS OF THE PEARSON CORRELATION COEFFICIENTS  
BETWEEN SILENT READING PERFORMANCE AND  
LANGUAGE ABILITIES FOR DISABLED  
EIGHTH GRADE READERS

Measure	ATGM		CRGM		VOGM		COGM	
	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>	r	r <sup>2</sup>
PPVT	.04	.00	.03	.00	.22	.05	.15	.02
INWR	.19	.04	.23	.05	.07	.01	.28	.08
SMWR	.14	.02	.15	.02	.14	.02	.15	.02
VOWR	.37*	.13	.37*	.14	.38*	.14	.26	.07
COWR	.18	.03	.12	.01	.42*	.17	.28	.06
VCWK	.29	.08	.28	.08	.45*	.20	.28	.08
SLDC	.03	.00	.06	.00	.01	.00	.02	.00
HWDC	.15	.02	.11	.01	.10	.01	.19	.04
MCLI	.05	.00	.05	.00	.06	.00	.04	.00
SCLI	.09	.01	.01	.00	.37*	.13	.18	.03
TUSM	.01	.00	.04	.00	.18	.03	.20	.04
SLSM	.01	.00	.16	.03	.18	.03	.18	.03
CLSM	.19	.03	.03	.00	.03	.00	.16	.03

\*p beyond the .05 level of confidence

\*\*p beyond the .01 level of confidence

Reading Variables: Gates-MacGinitie Reading Test--ATGM/number attempted;  
CRGM/number correct; VOGM/vocabulary; COGM/comprehension

Language Variables: PPVT/Peabody Picture Vocabulary Test; Wechsler Intelligence Scales for Children-Revised; INWR/information; SMWR/similarities; VOWR/vocabulary; COWR/comprehension; Kaufman factor analysis of the WISC-R--VCWK/verbal comprehension; Dale-Chall Readability Formula--SLDC/sentence length and HWDC/number of hard words; Syntactic Maturity Test--MCLI/ratio of T-Units per sentence; SCLI/ratio of subordinate clauses per T-Unit; TUSM/main clause length; SLSM/sentence length; CLSM/clause length

TABLE XII  
 SUMMARY OF PEARSON CORRELATION COEFFICIENTS  
 FOR ABLE AND DISABLED FOURTH, SIXTH,  
 AND EIGHTH GRADE READERS

	4A	4D	6A	6D	8A	8D
PPVT/ATGM				.56**		
PPVT/CRGM				.59**		
PPVT/VOGM	.43*		.53**	.60**		
INWR/ATGM					.40*	
INWR/CRGM					.40*	
INWR/VOGM			.44*	.38*		
INWR/COGM					.37*	
SMWR/VOGM	.46*	.46*	.40*			
SMWR/COGM			.40*		.40*	
VOWR/ATGM					.41*	.37*
VOWR/CRGM					.43*	.37*
VOWR/VOGM	.58**					.38*
VOWR/COGM	.51**		.46*		.57*	
COWR/ATGM			.46*	.37*	.41*	
COWR/CRGM					.41*	
COWR/VOGM	.56*	.37*				.52*
COWR/COGM					.43*	
VCWK/ATGM					.49**	
VCWK/CRGM				.39*	.50**	
VCWR/VOGM		.53*		.60*	.46*	.45*
VCWR/COGM		.38*	.50*	.37*	.69**	.45*
SLDC/ATGM	.37*					



TABLE XII (Continued)

	4A	4D	6A	6D	8A	8D
HWDC/VOGM	.60**					
HWDC/COGM	.47**					
MCLI/VOGM	.36*					
SCLI/ATGM	.55**					
SCLI/CRGM	.60*					
SCLI/VOGM						.37*
SCLI/COGM	.38*					
TUSM/ATGM	.37*					
TUSM/CRGM	.42*					
TUSM/VOGM	.45*					
SLSM/VOGM				.53**	.38*	
CLSM/COGM			.38*			

\*p beyond the .05 level of confidence  
 \*\*p beyond the .01 level of confidence

grade readers. Figures 1, 2, 3, 4, and 5 show the mean age and mean grade age scores for comparison of the different groups for language and reading measures.

The Extent of Difference Between Relationships  
Between Reading Performance and Language  
Ability of Able and Disabled Readers

To investigate the extent of difference between relationships between reading performance and language abilities, Fisher's transformation to  $z_r$  was calculated for each pair of correlations for able and disabled readers at the fourth, sixth, and eighth grade level. Differences between four pairs of correlations are significant at the .05 level of confidence.

Three of the four pairs of correlations having significant differences are between able and disabled fourth grade readers. These are: the relationship between the subtest of the Gates-MacGinitie Reading Test, number attempted, and the subordinate clause index of the Syntactic Maturity Test with a  $z_r$  value of 1.99; the relationship between the subtest, number correct, of the Gates-MacGinitie Reading Test and the subordinate clause index of the Syntactic Maturity Test with a  $z_r$  value of 2.36; and the vocabulary subtest of the Gates-MacGinitie Reading Test and verbal comprehension of the Kaufman factor analysis of the WISC-R with a  $z_r$  value of 2.07.

The fourth pair of correlations having a significant  $z_r$  value is between able and disabled readers at the eighth grade level. This significant difference is between relationships of the comprehension subtest of the Gates-MacGinitie Reading Test and verbal comprehension

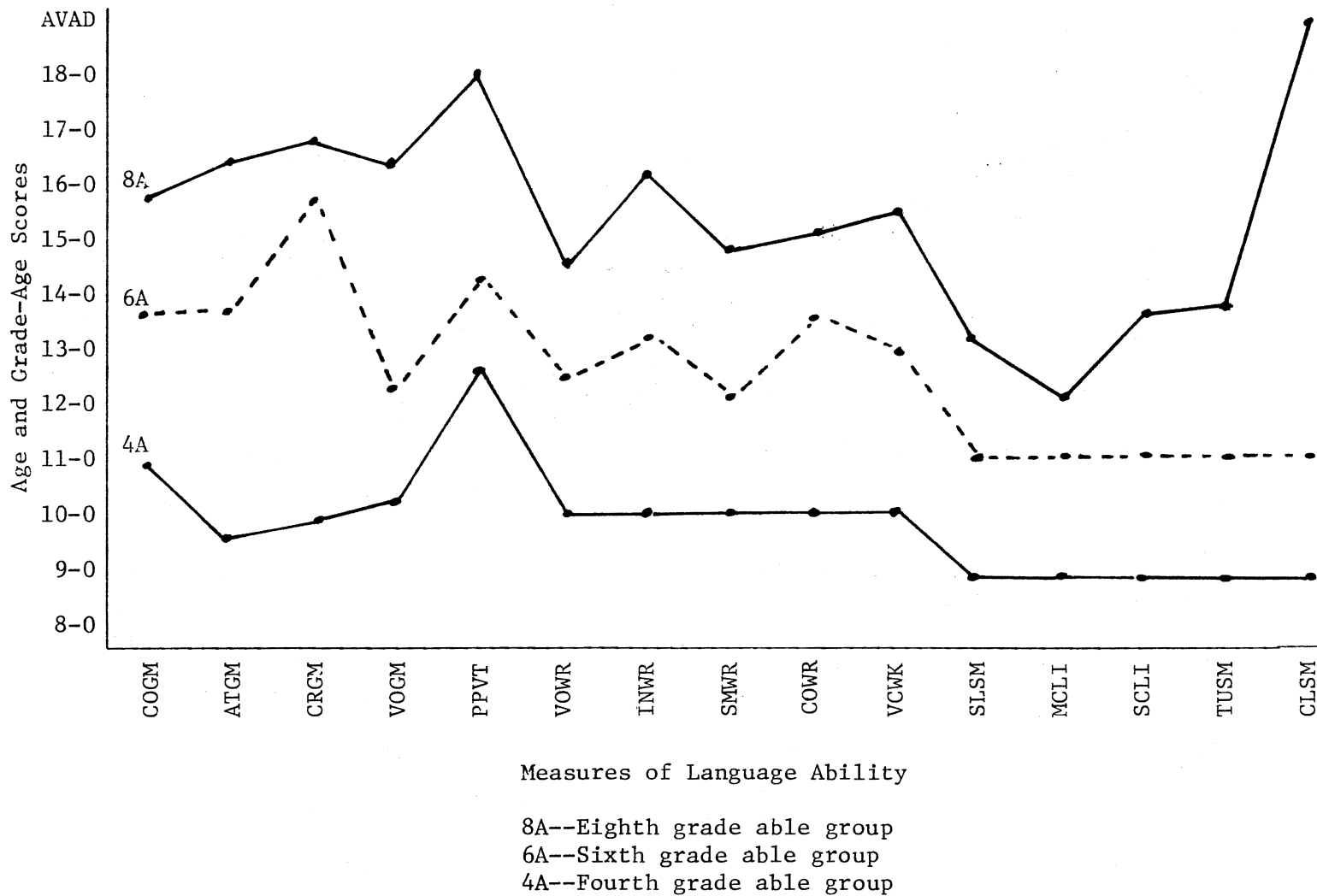


Figure 1. Reading Group Patterns for Age and Grade-Age by Language Measures for Able Readers

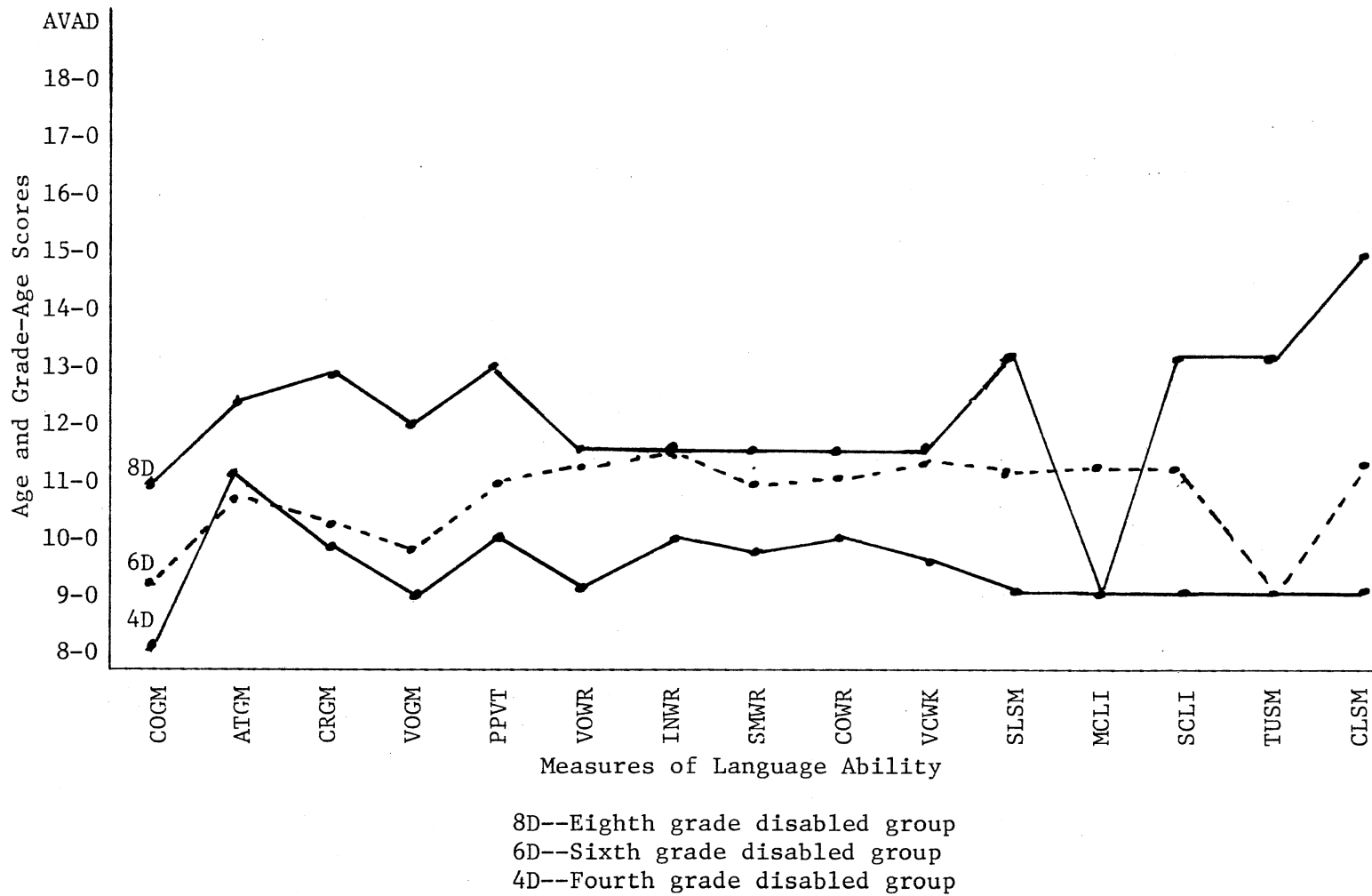
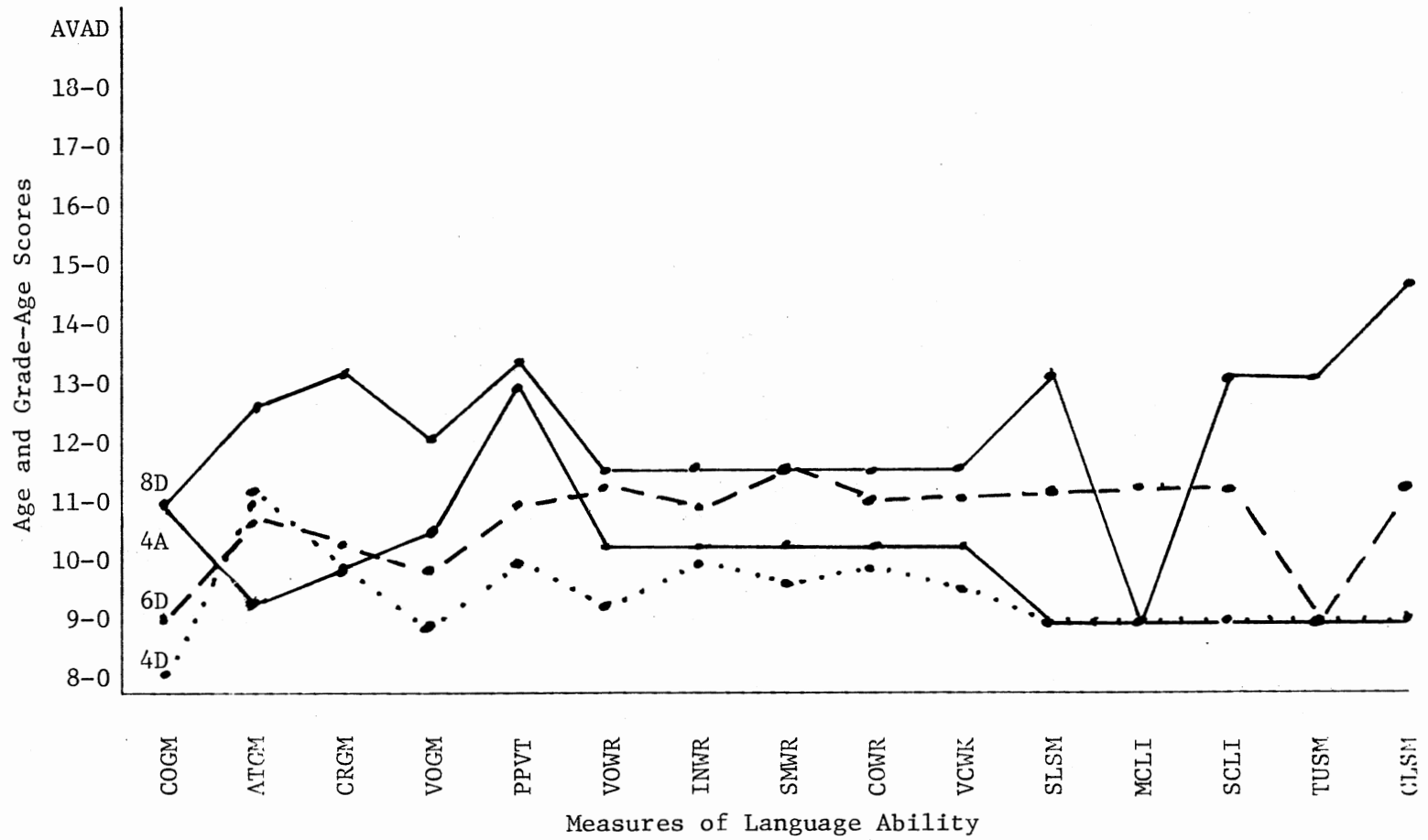


Figure 2. Reading Group Patterns for Age and Grade-Age by Language Measures for Disabled Readers



8D--Eighth grade disabled group  
 4A--Fourth grade able group  
 6D--Sixth grade disabled group  
 4D--Fourth grade disabled group

Figure 3. Reading Group Patterns for Age and Grade-Age by Language Measure for Able Fourth Grade Readers and Disabled Readers

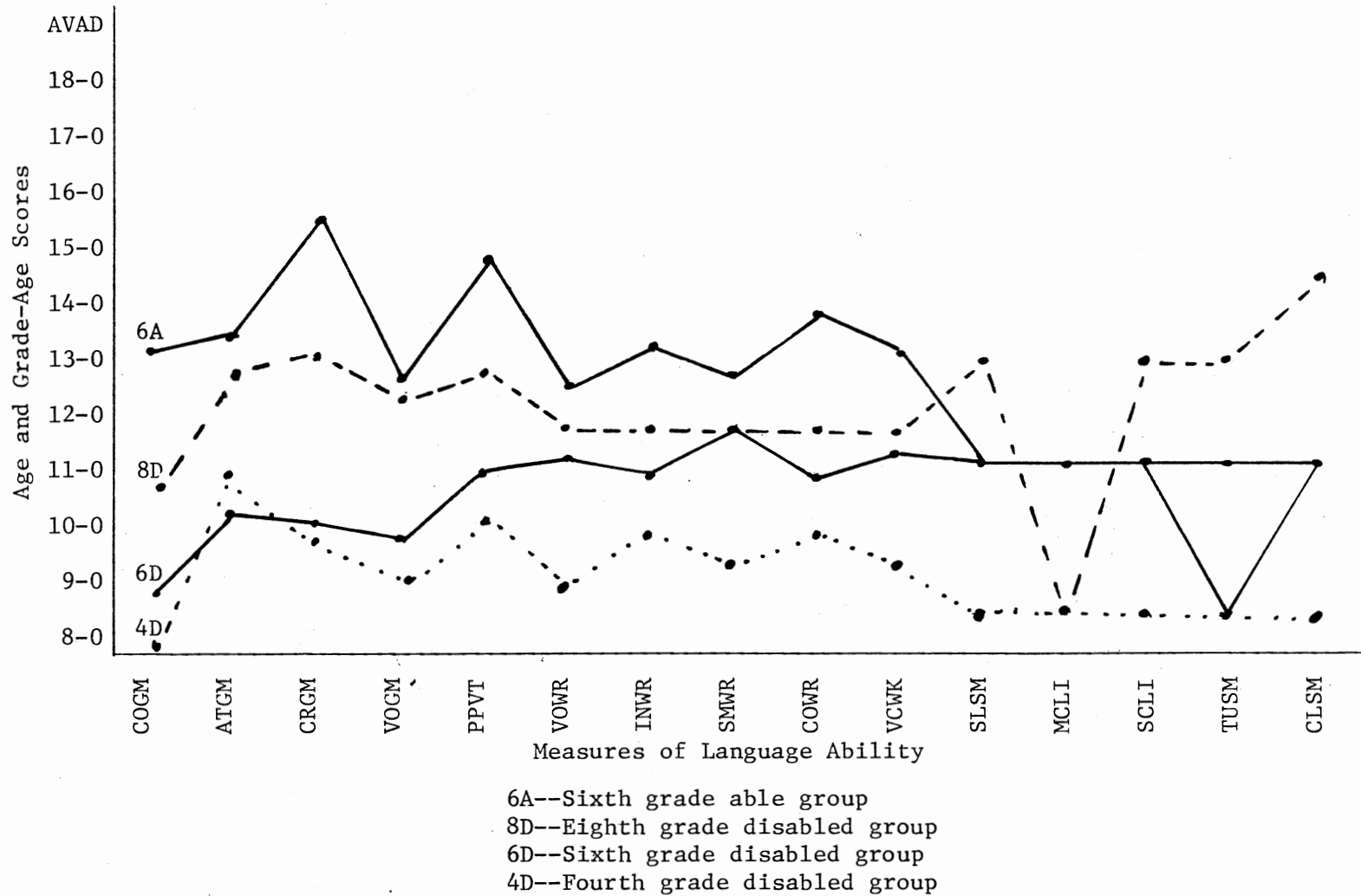
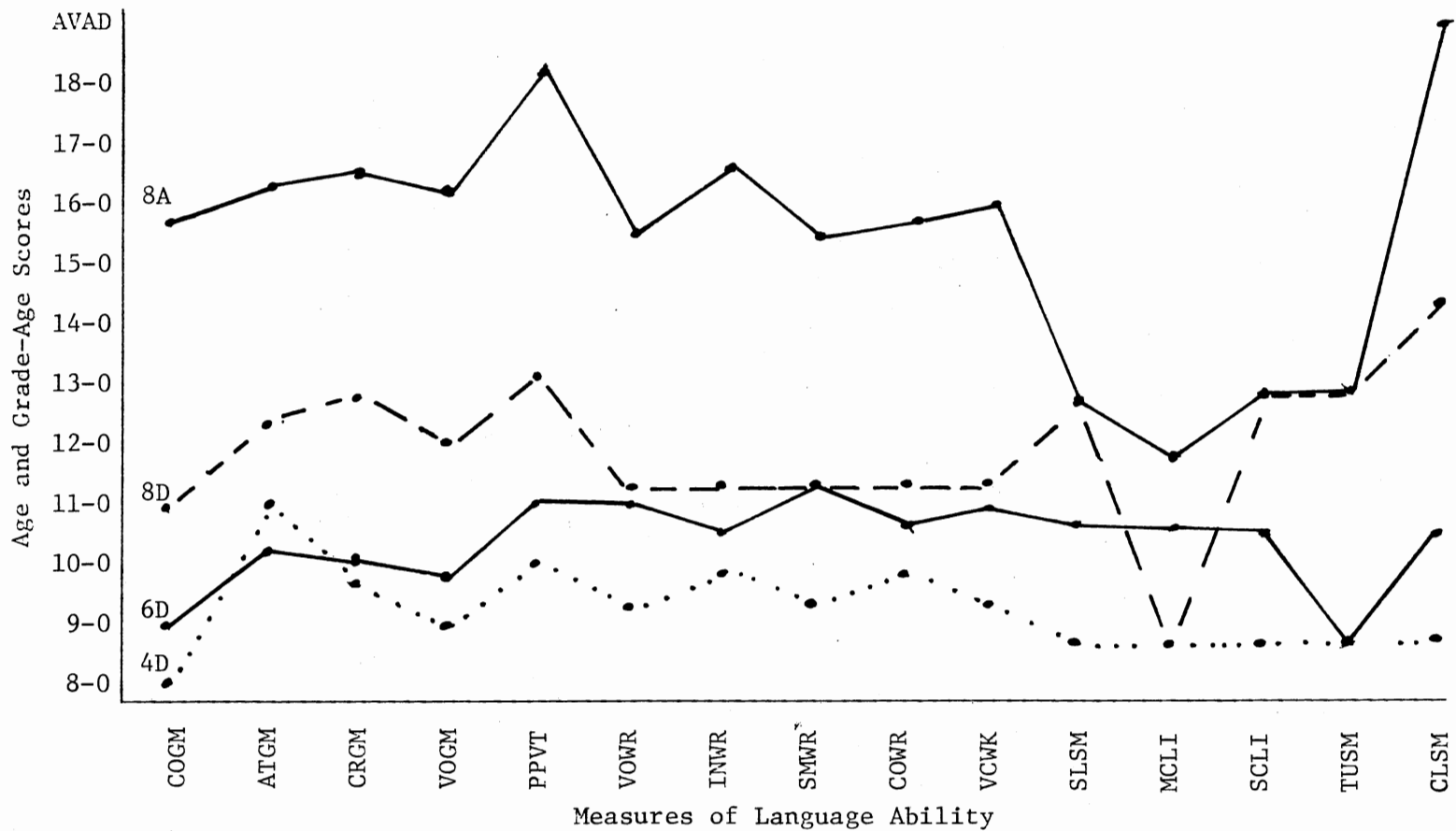


Figure 4. Reading Group Patterns for Age and Grade-Age by Language Measure for Able Sixth Grade Readers and Disabled Readers



8A--Eighth grade able group  
 8D--Eighth grade disabled group  
 6D--Sixth grade disabled group  
 4D--Fourth grade disabled group

Figure 5. Reading Group Patterns for Age and Grade-Age by Language Measures for Able Eighth Grade Readers and Disabled Readers

on the Kaufman factor analysis of the WISC-R with a  $z_r$  value of 2.144.

The  $z_r$  values were also computed for significant differences between correlations for disabled reading groups. Three pairs of significant correlations are at the .05 level of confidence. The correlation of the Peabody Picture Vocabulary Test scores are significant between all disabled groups; a  $z_r$  value of 2.31 is reported between correlations of scores between disabled fourth and sixth grade readers; a  $z_r$  value of 2.10 between correlations of scores of fourth and eighth grade disabled groups; and a  $z_r$  value of 2.17 between correlations of scores of disabled sixth and eighth grade readers.

*Here*

#### Patterns of Significant Correlations

The significant correlations between measures of reading performance and measures of language ability are primarily between the four measures of reading performance and six measures of language ability. The correlations represent 77 percent found to be significant between the four measures of reading performance and the six measures of language ability as measured by the Peabody Picture Vocabulary Test; the four WISC-R subtests; information, similarities, vocabulary, and comprehension; and the verbal comprehension scores on the Kaufman factor analysis of the WISC-R. The  $z_r$  values show significant differences between correlation coefficients between able and disabled readers at the fourth grade level for subtests, number attempted and number correct, of the Gates-MacGinitie Reading Test and the subordinate clause index of the Syntactic Maturity Test. There are also significant differences between the vocabulary subtest of the Gates-MacGinitie Reading Test and the sentence length of the Dale-Chall Readability Formula. One



other significant  $z_r$  value is reported. There is a significant difference between  $z_r$  values computed for correlation coefficients for able and disabled eighth grade readers between the measures of reading performance, the comprehension subtest of the Gates-MacGinitie Reading Test and the verbal comprehension score on the Kaufman factor analysis of the WISC-R. The only significant z scores between correlations of disabled reading groups across grade levels are between the subtests, number attempted and vocabulary, of the Gates-MacGinitie Reading Test and the measure of receptive vocabulary of the Peabody Picture Vocabulary Test.

#### Summary

This chapter has presented the statistical analysis of the data as found by computing Pearson product-moment correlations between scores from the four measures of reading performance; number attempted, number correct, vocabulary, and comprehension subtests from the Gates-MacGinitie Reading Test, and the thirteen measures of language ability; four subtests of the WISC-R; information, similarities, vocabulary, and comprehension; sentence length and number of hard words from the Dale-Chall Readability Formula and the Dale List of 3,000 Familiar Words; <sup>1</sup>ratio of T-Units per sentence, <sup>2</sup>ratio of subordinate clauses per T-Unit, <sup>3</sup>T-Unit length, <sup>4</sup>sentence length, <sup>5</sup>and clause length on the Syntactic Maturity Test.

Seventy-seven percent of the significant relationships are between reading performance scores and scores on the measures of language ability, the Peabody Picture Vocabulary Test, the verbal comprehension scores on the WISC-R, and the verbal comprehension scores of the Kaufman analysis of WISC-R. Seventy-nine percent of the significant

relationships between scores on measures of reading performance and subtests requiring subjects to write material, as opposed to verbal responses for measures of language ability, is at the fourth grade level for the able group.

There are only four significant differences between correlation coefficients for able and disabled fourth grade readers and one significant difference between correlations between scores for able and disabled readers at the eighth grade level. There is one significant difference between correlations between each of the following: disabled fourth and sixth grade readers; disabled fourth and eighth grade readers; and disabled sixth and eighth grade readers.

## CHAPTER V

### GENERAL SUMMARY OF THE INVESTIGATION

This study investigated the relationships between selected language abilities and silent reading performance of able and disabled readers in the fourth, sixth, and eighth grades. The language and reading skills selected for investigation were: silent reading comprehension, vocabulary, verbal comprehension, and syntactic maturity. Seventeen variables were chosen to measure these four categories of reading performance and language ability.

The sample was composed of 180 fourth, sixth, and eighth grade students from four schools in semirural communities in north central Oklahoma. There were six groups of 30 students for each ability group at each represented grade level. The subjects were randomly selected from students screened who met the criteria set for this study: a non-verbal IQ that did not fall below the average range for the test; disabled fourth grade readers with a silent reading score of at least .8 below expectancy level, disabled sixth graders with a silent reading score of 1.2 years below expectancy, and eighth grade readers with a silent reading score of 1.5 years below expectancy; able readers with a silent reading score equal to or above their expectancy level; English as the first language background; and each student had not repeated a grade at the time of assessment.

The study sample was tested during March, April, and May of 1978. Group tests included: The Lorge-Thorndike Intelligence Test--Nonverbal Battery, Forms 3 and 4; the Gates-MacGinitie Reading Test, Survey D or E; and an instrument of Syntactic Maturity. All students were individually administered the Peabody Picture Vocabulary Test and four subtests of the verbal scale of the Wechsler Intelligence Scale for Children-Revised. A free writing sample was also elicited from each subject.

Pearson product-moment correlations were computed to determine the relationship between the measures of language ability and measures of reading performance for all readers. These correlations were tested for significance by the students t-test. Fisher's transformation to  $z_r$  was computed to determine the difference between correlations between able and disabled readers at the same grade level and between disabled readers across grade levels.

The able fourth grade readers mean IQ score on the nonverbal intelligence test is 114 and the mean score for the disabled group is 101. The able sixth grade reading group has a mean IQ score on a nonverbal intelligence test of 112 and the disabled sixth grade group has a mean score of 102. The able eighth grade reading group has a mean IQ score on a nonverbal intelligence test of 116 and the disabled eighth grade group has a mean IQ score of 108. The differences between scores between groups at the same grade level show a range of 13 points for fourth grade readers, 10 points for the sixth grade readers, and 7 points for the eighth grade group. These scores all fall within the average range for this test. The mean ages for the sample groups are within the mean age expected for each grade level. The disabled fourth grade group has a mean age of 9 years and 4 months while the able

group mean is three months older with an age mean of 9 years and 7 months. The able sixth grade reading group shows a mean age of 11 years and 6 months and disabled group has a mean age that is 2 months older, 11 years and 8 months. The able and disabled eighth grade reading groups show identical mean ages of 13 years and 6 months.

The silent reading comprehension subtest of the Gates-MacGinitie Reading Test was used as a screening instrument and as a reading variable for the purpose of investigating the relationship between reading performance and language ability. The mean grade scores for the able fourth grade group is 6.1 grade level score and for the disabled group, 3.1 on the silent reading subtest. The sixth grade able reading group has a mean score on the silent reading comprehension subtest of 8.8 and the disabled sixth grade reading group has a grade level score of 4.1. The able eighth grade reading group has a grade level score of 11.0 and the disabled group a score of 6.0. The able reading groups show a range of 2 years and 7 months between the fourth and sixth grade level scores and 2 years and 4 months between sixth and eighth grade level scores. The disabled readers show a grade level range of 1 year and 1 month between disabled groups of sixth and eighth grade readers.

The disabled fourth grade group scored higher on the measure of silent reading, number attempted and number correct, than did the able fourth grade readers. The disabled group have a grade level score of 6.3 for number attempted and a score of 5.2 for number correct while the able group had a grade level score of 4.8 for number attempted and 5.2 for number correct. The fourth grade level was the only place that this occurs. The disabled sixth grade group is approximately three grade levels below the able group for the number attempted subtest and

over five grade levels below the able sixth grade group for the able sixth grade group for the mean grade level scores for the reading subtest, number correct. The disabled eighth grade level reading group has a mean grade level score that lags behind that of the able eighth grade readers by 3 years and 10 months for the reading subtest number attempted and 3 years and 7 months for the subtest, number correct. The silent reading vocabulary grade scores show a difference between the mean grade level scores for able and disabled to be 1 year and 8 months at the fourth grade level; a difference of 2 years and 6 months at the sixth grade level; and 4 years at the eighth grade level. The reading vocabulary seems to continue to develop across grade levels at a slower rate than that of able readers. This is shown by the increasing size of differences between fourth and sixth grade level scores and the difference between sixth and eighth grade level scores. These differences are not; however, great enough to be significant when the Fisher's transformation to  $z$  is computed for the Pearson correlation coefficients.

The differences between scores on the PPVT are the only scores showing differences that are significant between able and disabled readers at the .05 level of confidence when Fisher's transformation to  $z_r$  is calculated between disabled readers between fourth and sixth grade; fourth and eighth grade; and sixth and eighth grade.

The verbal comprehension score of the Kaufman factor analysis of the WISC-R is a mean scaled score for the four verbal scales of the WISC-R. This verbal comprehension score of the Kaufman factor analysis of the WISC-R shows the following mean age scores: fourth grade able readers, 11 years and 4 months; able sixth grade readers,

13 years and 1 month; able eighth grade readers, 15 years and 5 months; disabled fourth grade readers, 9 years and 8 months; disabled sixth grade readers, 11 years and 2 months; disabled eighth grade readers, 11 years and 9 months. The able fourth grade readers show a verbal comprehension mean age score that is approximately 1 year and 9 months above their chronological mean age. The disabled fourth grade readers show a mean verbal comprehension mean score that is approximately at their mean chronological age level. The disabled sixth grade has a mean verbal comprehension score that is approximately 6 months below that of their chronological mean age. The disabled eighth grade reading group shows a mean verbal comprehension age score that is approximately 1 year and 10 months below that of the mean chronological age level. The difference between the mean verbal comprehension age score and the difference between the mean chronological age level gradually increases between grade levels for disabled readers with the largest increase in difference between the sixth and eighth grade disabled groups.

The free writing passages as shown on Table IV gives a mean sentence length that is twice as long for the disabled group as for the able group at the fourth grade level. These long mean sentence length reflect run-on sentences strung together with and's, but's, commas, or nothing. The fourth grade disabled group showed the greatest number of words per sentence of any group in the sample although each of the remaining five groups did have at least two examples of the 100 word free writing sample written in one or two sentences. Except for the disabled fourth grade reading group there is little difference between mean sentence length across grade levels and reading groups. The mean sentence lengths for the sixth and eighth grade reading groups

are found in Tables IV and V. The number of hard words as determined by the percentage of words not found on the Dale List of 3,000 Familiar Words for the fourth, sixth, and eighth grade groups are found in Tables III, IV, and V respectively.

All approximate mean grade scores for the Syntactic Maturity Test are at grade level for all groups except for the main clause index (ratio of T-Units per sentence): the grade score of 6.0 for able readers and 4.0 for disabled readers at the eighth grade level and the clause length score of average adult for able readers and 10.0 for disabled readers at the eighth grade level. See Appendix A for the instrument for the Syntactic Maturity Test and Appendix B for Hunt's scoring criteria and a comparison of mean scores. See Figure 1 for reading group patterns for age and grade-age by language measures for able readers; see Figure 2 for this information for disabled readers; Figure 3 shows this information for able fourth grade readers and disabled fourth, sixth, and eighth grade readers; Figure 4 shows these mean scores for able sixth grade readers and disabled fourth, sixth, and eighth grade reading groups; Figure 5 gives these mean scores for able eighth grade readers and disabled fourth, sixth, and eighth grade readers.

The significant relationships between reading performance and language ability across grade levels for able and disabled fourth, sixth, and eighth grade readers cluster in the categories measuring receptive vocabulary and verbal comprehension. The two measures of reading performance showing the largest number of significant relationships between measures of language ability are vocabulary and comprehension at both the .01 and .05 level of confidence. The measures of



language ability showing the largest number of significant correlations for all groups are the subtests vocabulary and comprehension on the WISC-R; the verbal comprehension score on the Kaufman factor analysis of the WISC-R; and the receptive vocabulary as measured by the Peabody Picture Vocabulary Test. Only at the fourth grade level for able readers is there a large percentage of significant relationships between reading performance and language ability as measured by the written responses as opposed to verbal responses. The extent of difference is greater for these measures than for the verbal when Fisher's transformation to  $z_r$  is computed for the Pearson correlation coefficients between reading performance and language ability between able and disabled readers at each grade level.

#### Conclusions

Results of this study indicate that a relationship exists between selected measures of language ability and measures of reading performance for intermediate students at the fourth, sixth, and eighth grade levels. There is a greater number of significant relationships between the language categories vocabulary and verbal comprehension and the vocabulary and comprehension reading variables. Language ability and reading performance are not strongly related for the disabled fourth grade reading group as there are only four significant relationships between variables for this group. The able fourth grade group is the only group with an appreciable number of significant correlations for the syntactic maturity variables.

Little significant difference exists between able and disabled readers across grade levels. There is a significant difference

receptive vocabulary scores and various measures of reading performance between disabled fourth and sixth grade readers and disabled sixth and eighth grade readers. There are two significant differences between fourth and sixth grade levels and two between the sixth and eighth grade group.

The disabled eighth grade reading group has a mean silent reading comprehension score of 6.0 which approximates that of the fourth grade able group at 6.1. This score is three grade levels above that of the disabled fourth grade reading group and two years above that for the sixth grade reading group sampled for this study. The receptive vocabulary measured by the Peabody Picture Vocabulary Test shows the same age scores for all disabled groups and the same age scores for all able groups. The scores for the able group would have shown some differences had the tables been extended to include older subjects. Disabled eighth grade readers reading at an approximate fourth grade reading level have language abilities ranging between the sixth and eighth grade levels as shown in Figure 3. Tooker (1977) found that disabled tenth grade students reading on a fourth grade level have a mean language ability of that of seventh grade students.

#### Recommendations

The results of this study are influenced by the assessment instruments used. A change in any of the instruments will probably alter the results.

- (1) The Syntactic Maturity Test principle applied to free writing samples might give a more in-depth indication of expressive language ability for this age group or perhaps oral language

could be recorded, transcribed, and analyzed for a measure of expressive vocabulary.

- (2) A more in-depth qualitative analysis should be done in conjunction with the quantitative analysis for the free writing passages and for the Syntactic Maturity Test. The number of subordinate clauses used in a passage was not sensitive to the difference in creative writing ability of some students. Some students wrote well constructed sentences using different sentence structures to express their ideas while they used only one subordinate clause. Other students used poorly constructed sentences with several subordinate clauses with or without punctuation.
- (3) The relationship between language ability and reading performance should be investigated at the fifth, seventh, and ninth grade levels. A greater significance between correlations between able and disabled groups and between disabled groups might be found for these grade levels.
- (4) Since oral language ability does show significant relationships with reading ability, a strong oral language development program should be incorporated into the school curriculum. This program should begin in kindergarten and continue through the remaining twelve grades.
- (5) Seventy-nine percent of the significant relationships between reading performance and language ability is for the fourth grade able reading group. This paucity of significant relationships at the sixth and eighth grade levels is incongruent with the results found for oral language. A study should be

made of the effect of a strong language development program utilizing practice in written language beginning in the primary grades and continuing through secondary school.

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APPENDICES

APPENDIX A

AN INSTRUMENT FOR SYNTACTIC MATURITY

BY ROY O'DONNELL

## ALUMINUM

Directions: Read the passage all the way through. You will notice that the sentences are short and choppy. Study the passage, and then re-write it in a better way. You may combine sentences, change the order of words, and omit words that are repeated too many times. But try not to leave out any of the information.

Aluminum is a metal. It is abundant. It has many uses. It comes from bauxite. Bauxite is an ore. Bauxite looks like clay. Bauxite contains aluminum. It contains several other substances. Workmen extract these other substances from the bauxite. They grind the bauxite. They put it in tanks. Pressure is in the tanks. The other substances form a mass. They remove the mass. They use filters. A liquid remains. They put it through several other processes. It finally yields a chemical. The chemical is powdery. It is white. The chemical is alumina. It is a mixture. It contains aluminum. It contains oxygen. Workmen separate the aluminum from the oxygen. They use electricity. They finally produce a metal. The metal is light. It has a luster. The luster is bright. The luster is silvery. This metal comes in many forms.

(O'Donnell, et al., 1967, p. 21)

APPENDIX B

COMPARISONS BY GRADE LEVEL OF THE READING GROUPS'

SCORES ON THE FIVE SYNOPSIS OF CLAUSE TO

SENTENCE LENGTH FACTORS AND

HUNT'S NORMATIVE DATA

TABLE XIII

COMPARISON BY GRADE LEVEL OF THE READING GROUPS' SCORES ON THE FIVE SYNOPSIS  
OF CLAUSE TO SENTENCE LENGTH FACTORS AND HUNT'S NORMATIVE DATA

Factors	Hunt's Normative Data					Reading Groups						Grade Level					
	G4	G6	G8	G10	G12	4A	4D	6A	6D	8A	8D	4A	4D	6A	6D	8A	8D
Sentence Length	9.21	8.75	11.73	11.68	12.17	7.57	7.00	8.89	10.60	10.82	11.29	4.0	4.0	6.0	6.0	8.0	8.0
Main Clause Coordination Index	1.74	1.34	1.25	1.13	1.08	1.54	1.39	1.44	2.14	1.52	2.05	4.0	4.0	6.0	4.0	6.0	4.0
T-Unit Length	5.24	6.84	9.84	10.44	11.30	5.07	4.35	6.14	5.06	8.79	7.68	4.0	4.0	6.0	4.0	8.0	8.0
Subordinate Clause Index	1.04	1.18	1.43	1.42	1.44	1.05	1.04	1.05	1.04	1.41	1.41	4.0	4.0	6.0	6.0	8.0	8.0
Clause Length	5.19	5.76	6.79	7.35	7.85	4.93	4.64	5.50	4.79	8.79	7.68	4.0	4.0	6.0	6.0	AVAD	10.0

APPENDIX C

READING GROUP PATTERNS FOR AGE AND GRADE-AGE

BY LANGUAGE MEASURES

BY NANCY TOOKER

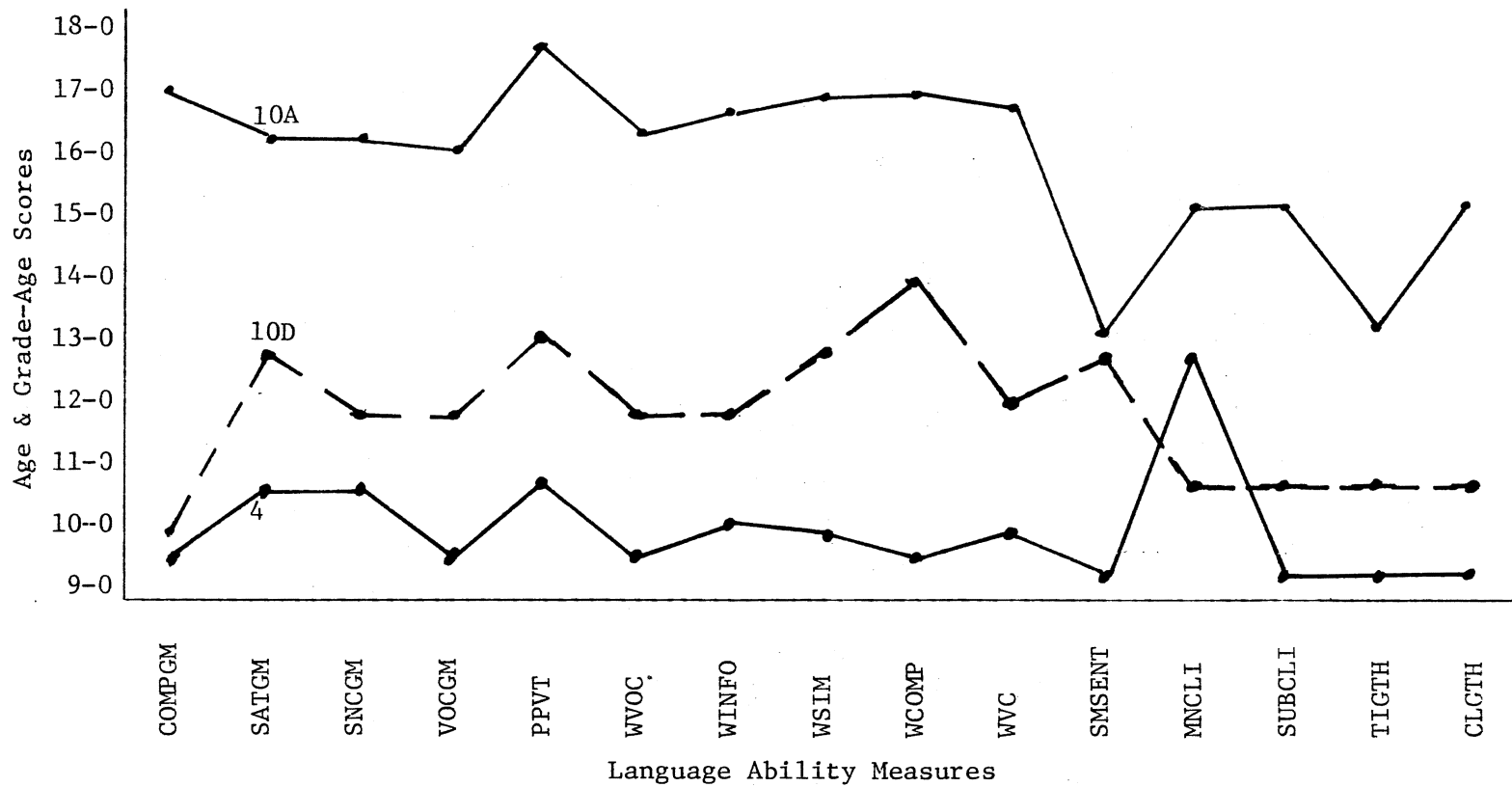


Figure 6. Reading Group Patterns for Age and Grade-Age by Language Measures



VITA <sup>2</sup>

Dava White Sellers

Candidate for the Degree of

Doctor of Education

Thesis: THE RELATIONSHIP OF LANGUAGE ABILITIES AND READING PERFORMANCE OF INTERMEDIATE ABLE AND DISABLED READERS AT THREE GRADE LEVELS

Major Field: Curriculum and Instruction

Biographical:

Personal Data: Born in Plainview, Texas, April 23, 1928, the second daughter of Mr. and Mrs. David E. White.

Education: Graduated from Westville, Oklahoma, High School in 1946. Received a Bachelor of Arts in Education degree from Northeastern Oklahoma State College at Tahlequah with a major in Art Education in May, 1968. Attended the University of Arkansas at Fayetteville, 1973; received the Arkansas State Elementary Teaching Credential, December, 1973; received the Master of Education degree from Northeastern Oklahoma State University at Tahlequah, with a major in reading, May, 1976; fulfilled the requirements for the Doctor of Education degree in December, 1978.

Professional Experience: Free lance commercial artist, Atlanta, Georgia, and Miami, Florida, 1960-1967; owner of arts and crafts shop and insurance agency, taught private classes in basic drawing, water color, oil painting, ceramics, and others; conducted arts and crafts workshops; taught classes for Continuing Education in arts and crafts, Westville, Oklahoma, and Gentry, Arkansas, 1968-1973; third grade teacher, Lincoln, Arkansas, 1974-1975; remedial reading teacher, Lincoln, Arkansas, 1975-1976; graduate assistant, Oklahoma State University, teaching college reading improvement, 1976; graduate assistant, Oklahoma State University, supervisor, Reading Clinic, 1977; supervisor, Practicum in Reading, summer, Oklahoma State University, 1977-1978; graduate assistant, supervisor, Reading Clinic, 1977-1978; screened kindergarten students for first grade reading methodology placement, 1978.