AN INVESTIGATION OF THE RELATIONSHIP BETWEEN READING ABILITY AND WRITTEN COMPOSITION ABILITY

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JUN 2 1978
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AN INVESTIGATION OF THE RELATIONSHIP BETWEEN READING ABILITY AND WRITTEN COMPOSITION ABILITY

by

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A Thesis submitted in partial fulfillment
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ABSTRACT

The major purpose of this study was to ascertain whether there is a relationship between reading ability and written composition ability. Specifically, the relationship between the students' achievement in reading and each of sex, intelligence, and socioeconomic status of the family was investigated. The relationship of sex, intelligence, and socioeconomic status to students' achievement in written composition was also studied. In addition, the subscores on reading were correlated with the subscores on written composition to give an indication of the relationship between reading and writing.

One hundred grade six pupils from the educational district of Conception Bay Centre comprised the sample. The achievement of the fifty-one girls and forty-nine boys in reading was determined by their score on The New Developmental Reading Test, Form A. The written composition ability score was determined by their achievement according to a self-devised Writing Ability Formula. Socioeconomic status was determined by an occupational class scale. The intelligence scores used were those obtained on the Canadian Lorge-Thorndike Intelligence Test, Nonverbal Battery.

It was found that a significant relationship exists between reading ability and written composition ability. The high positive correlations between the subscores of

reading and the subscores of writing give a powerful indication of the nature of the relationship between the two. It was found that intelligence correlated positively with reading and written composition ability. The variables of sex and socioeconomic status did not correlate positively with reading ability and written composition ability in this study.

ACKNOWLEDGEMENTS

The writer expresses her gratitude to Dr. L.R. Brown, Chairman of the Thesis Committee, for his constant direction and advice in the development of this thesis, and to the other members of the committee for their helpful suggestions.

The kind cooperation which was received from the Roman Catholic School Board for Conception Bay Centre, as well as from principals, teachers, and students, is gratefully acknowledged.

I would also like to thank my mother and my husband LeRoy for their understanding and encouragement.

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CHAPTER I

I. INTRODUCTION AND STATEMENT OF THE PROBLEM

Research (Goodman, 1965; Evanechko et al., 1974) has indicated that there is a relationship among the language skills. However, the specific nature of these relationships is not always clear. The activity of reading cannot be understood without also understanding the nature of writing. Insights into the skills of reading and writing can be found by examining the relationships between them. It is not enough to know that the child who cannot read cannot write, but rather it is necessary to identify the common elements in the two processes, and by focusing on these commonalities to increase the overall effectiveness of instruction.

II. PURPOSES OF THE STUDY

The major purpose of this study was to determine whether there is a relationship between reading ability and written composition ability. Several other questions were also investigated:

1. What is the relationship between sex and reading achievement?

2. What is the relationship between sex and writing achievement?

3. What is the relationship between intelligence and

reading achievement?

4. What is the relationship between intelligence and writing achievement?

5. What is the relationship between socioeconomic status and reading achievement?

6. What is the relationship between socioeconomic status and writing achievement?

III. DEFINITIONS

This section contains a brief description of each of the variables used in this study.

Reading Achievement

Reading Achievement refers to the scores obtained by a student on The New Developmental Reading Test, (1968 Edition), Form A. A copy of this test is contained in Appendix A.

Written Composition Ability

Written Composition Ability refers to the scores obtained by a student on his or her writing sample as measured by a Writing Ability Formula (see Appendix B).

Socioeconomic Status

The socioeconomic status of each child is the relative position of the parents' occupation on a continuum as measured

by the Blishen Occupational Class Scale. This scale is contained in Appendix C.

Nonverbal Intelligence

This term refers to a score on The Canadian Lorge-Thorndike Intelligence Test (Multi-Level Edition, 1967). A copy of this test is contained in Appendix D.

IV. HYPOTHESES

The following were the null hypotheses for this study:

1. There will be no significant relationship between reading ability and written composition ability.

2. There will be no significant relationship between reading ability and the following variables:

   (a) Sex

   (b) Socioeconomic status

   (c) Intelligence

3. There will be no significant relationship between written composition and the following variables:

   (a) Sex

   (b) Socioeconomic status

   (c) Intelligence

V. LIMITATIONS OF THE STUDY

In this study, which endeavoured to ascertain whether there is a significant relationship between students' reading

ability and their written composition ability, controlling for sex, socioeconomic status and intelligence, it may be considered a limitation that other variables such as school facilities, school attendance and size of family were not considered.

It may also be considered a limitation that only one essay was used as a measure of each student's written composition ability, since it was possible that a student may have been emotionally upset or sick.

Two other limitations are that the study dealt only with rural grade six pupils, and only with those pupils within a single educational district, the district of Conception Bay Centre.

VI. SIGNIFICANCE OF THE STUDY

This study was concerned with ascertaining whether there is a relationship between reading ability and writing ability. It was indicated in the introduction that it is not sufficient to know that the child who cannot read cannot write, but rather one must be able to identify the common elements in the two processes, and this study has defined some of these commonalities. A knowledge of the relationship of the variables of sex, socioeconomic status and intelligence to reading and writing should be of some assistance to teachers in the adoption of different methods of teaching, suitable for the different types of students found in the schools.

VII. DESIGN OF THE STUDY

Data used in this study were obtained from a random sample of 100 grade six students from the district of the Roman Catholic School Board for Conception Bay Centre. Scores were obtained from the following sources:

1. a test on reading ability, The New Developmental Reading Test (1968 Edition, Form A);

2. an essay written by the students (Writing Ability Formula developed by the investigator);

3. a measure of the students' nonverbal intelligence, The Canadian Lorge-Thorndike Intelligence Test (Multi-Level Edition, 1967);

4. a measure of the socioeconomic level of the students' families (The Blishen Occupational Class Scale).

The major analysis of the study used the Pearson Product-Moment Correlation Coefficient. To correlate sex with reading ability and writing ability statistical analysis utilizing Chi Square tests was used.

VIII. OUTLINE OF REPORT

A review of the related literature will be presented in Chapter II. Chapter III contains a detailed account of experimental design, testing procedures, and the research procedures used to test the hypotheses. The results of the data analysis are contained in Chapter IV. The final chapter,

Chapter V, includes a summary and discussion of the findings, and contains some implications for education and further research.

CHAPTER II

REVIEW OF RELATED LITERATURE

I. READING IN RELATION TO WRITTEN COMPOSITION

Research indicates a close relationship between reading ability and written composition ability.

Deverell (1974:1) states that "the specialized form of human behaviour we call Reading is an individual's reaction to systematically arranged marks or scratches; making those marks or scratches is referred to as Writing. Therefore, the activity of reading cannot be understood without also understanding the nature of writing."

The purpose of writing is getting meaning into print, and the purpose of reading is getting meaning from print. Page (1974:172) writes: "A symbol in language can be a word, a phrase, a clause, a sentence, or whatever type and size language unit the language user designs in an analogy of meaning." Ryle (1949:61) writes: "Knowledge gained from reading includes meaning, in the sense that we can know what a sentence means by reconstructing the author's analogies, but knowledge also includes what we infer from a sentence in relation to our experiences after reconstructing the author's analogies."

Allen (1964:195-98) writes: "One of the first stages in a child's reading -- if not the first stage -- is that of

recognizing and pronouncing words." But this kind of word recognition will not enable the child to understand complicated sentences. To be able to read longer sentences intelligently, he must be able to recognize (either consciously or unconsciously) the grammatical positions that the different words occupy. That is to say, he must be able to recognize the structure (or grammar) of such sentences. The ability to comprehend a complicated sentence and to read it intelligently depends upon the reader's ability to analyze its syntactic structure accurately.

Vygotsky (1962:97-101) states that results of his investigation have shown that "the development of writing does not repeat the developmental history of speaking. Written speech is a separate linguistic function, differing from oral speech in both structure and mode of functioning. Even its minimal development requires a high level of abstraction. It is speech in thought and image only, lacking the musical, expressive, intonational qualities of oral speech. In learning to write, the child must disengage himself from the sensory aspect of speech and replace words by images of words." Vygotsky further states that his studies show that it is the abstract quality of written language that is the main stumbling block, not the underdevelopment of small muscles or any other mechanical obstacles. Written speech must explain the situation fully in order to be intelligible. The change from maximally compact inner speech requires what might be called deliberate semantics -- delib-

erate structuring of the web of meaning. Analysis clearly shows the study of grammar to be of paramount importance for the mental development of the child. Grammar and writing help the child to rise to a higher level of speech development. In conclusion, Vygotsky's investigation shows that the development of the psychological foundations for instruction in basic subjects does not precede instruction but unfolds in a continuous interaction with the contributions of instruction.

Goodman (1965:642) in a descriptive study of the oral reading of 100 first, second and third-grade children, suggests that "we must abandon our concentration on words in teaching reading and develop a theory of reading and a methodology which puts the focus where it belongs: on language."

A paper prepared by F. Allen Briggs (1966:1-7) for the National Reading Conference, Florida, concludes that a reader can understand, both more quickly and more efficiently, a sentence when he recognizes the pattern in which it is written and knows the purpose of that pattern. He suggests that language consists of four stages in ascending complication. Reading can be a simpler process if there is a clear understanding of the systems that connect these stages. The four stages are as follows:

> 1. The phonemic system...that is, the noises which signal differences in meaning (pat, sat, gat). The sounds are symbolized in writing by graphemes or letters. In English, an alphabetic language, the sounds are written to form words.
>
> 2. The graphemic system, phonetics and spelling. The words of the language...the groups of sound

(graphemes in writing) which have come to symbolize specific ideas.

3. The grammatical system. The sentence...groups of words put together to communicate concepts.

4. The rhetorical system. The composition...groups of sentences assembled into paragraphs and larger units of communication.

Briggs and Vygotsky are supported by Fries (1962) and Lefevre who also (1962) emphasize the importance of grammar or structure to meaningful reading.

Stoodt (1972:502-4) writes that written language is one of man's vehicles of communication; he writes what he intends others or himself to read; however, if the reader cannot understand his message, communication is not complete The reader should be able to understand the literal meaning of the message and the significance of the message, and to relate it to other messages. She designed a study to help improve understanding of this communication process. Using 95 fourth-grade students, randomly selected from the fourth-grade student population at three socioeconomic levels in Ohio, she investigated the relationship between reading comprehension and comprehension of conjunctions. The instruments, The Comprehension of Conjunctions Test, The Cloze Comprehension of Conjunction Test, The Stanford Achievement Test in reading and The Pintner Mental Ability Test were used, and an analysis of the results revealed that there is a significant relationship between reading comprehension and comprehension of conjunctions.

Ruddell (1965), studying 140 students selected at random from the total fourth-grade population in Bloomington,

Indiana, found similar results to those of Stoodt. Again using the Cloze Technique, he found reading comprehension to be a function of the similarity of patterns of language structure in the reading material to oral patterns of language structure used by children. A second finding was that reading comprehension scores on materials that utilize high frequency patterns of oral language structure are significantly greater than reading comprehension scores on materials that utilize low frequency patterns of oral language structure.

These findings are supported by Bormuth (1966:79-82). He states: "Many fail to understand what they read, not because the concepts are too difficult or because they lack basic reading skills, but simply because of the complexity of the language in which those concepts are presented." In an investigation, also using the Cloze Test, Bormuth concluded that words containing few syllables or letters and the high frequency words tended to be easiest and small increases in word length or decreases in frequency resulted in large increases in difficulty at first.

Bond and Wagner (1966) contend that in order to understand a paragraph, children must be taught to see the interrelationships among sentences. Tinker and McCullough (1968) emphasize that the identification of the topic sentence containing the key idea of the paragraph and interpretation of how the topic sentence is related to the other sentences is extremely important.

In a study of 382 randomly selected elementary school children, grades four to six, Williams and Stevens (1972) endeavoured to determine the effectiveness of teaching methods in the areas of summarizing the main idea and locating the topic sentence. Students were instructed to read each paragraph carefully, reread the paragraph, and underline the topic sentence. In addition, they were to write a title for each paragraph as a means of indicating the main idea. Paragraphs selected for the elementary level students were written at the fourth grade level as determined by the average of several readability formulas. Results showed the elementary students were able to determine approximately 40 percent of the topic sentences and 50 percent of the acceptable titles. It should be noted, however, that when the topic sentence was stated in positions other than the first sentence, elementary students could identify it only 30 percent of the time. The recommendations suggested as a result of the findings of this study are that these skills be taught and improved; thereby, students will be more able to grasp ideas and improve reading comprehension and study techniques.

Bormuth et al. (1970:349-57) state: "Since much of the knowledge contained in the school's curriculum is transmitted through the medium of written language, the failure or success of the educational enterprise is heavily dependent upon how well students are able to comprehend the language in their instructional materials." They designed a study which represents a preliminary attempt to identify and

operationalize the skills employed in comprehending the information signaled by the syntactic structures of language; secondly, to determine if the skills identified represent homogeneous classes of behaviour, and whether these skills might be hierarchically related; and finally, to determine the general level of performance on these skills displayed by fourth-grade children.

From a taxonomy of 52 types of sentence structures, the 25 judged to be the most difficult were selected for testing. Also all 16 of the intersentence and all 14 of the anaphoric structures identified were tested. Examples of the question types used in this study can be seen in Appendix E. To do this testing, two sentences containing each of the structures mentioned above were written and each embedded in its own paragraph. Then four types of questions were constructed to test each of the structures. Sixty fourth-grade students were used per structure, thus a total of 240 students in all four structures.

Bormuth et al. (1970:354-55) found: "By far the most startling result of this study was the fact that large proportions of the students were unable to demonstrate a comprehension of the most basic syntactic structures by which information is signaled in language." They summarized the findings on the second part of the study as follows: "It seems that the comprehension skills defined in this analysis represent fairly homogeneous classes of behaviour. The difficulty ranking of skills is of fundamental importance in the designing of instruments,

since those rankings often reflect hierarchial relationships among the skills and thereby reveal the order in which skills should be taught." The expected ordering was that rote sentence structures would be easiest to comprehend, anaphora or substitute expressions would be second, and intersentence or compound structures the most difficult.

Fagan (1971) writes that for children to comprehend what they read, they must be able to understand the written language structures by which ideas, information and concepts are conveyed. Although children may be fluent in their use of oral language and may have acquired control over the basic sentence patterns of the English language by the time they enter school, it does not follow that this fluency will automatically transfer to written language structures. He further states that vocabulary, or number of hard words, and sentence length appeared to be the two factors which were rated by experimenters as causing greatest difficulty in reading. It was the purpose of his study to determine if the reading comprehension of grades four, five, and six pupils was affected by the number and/or types of transformations in the language of the passages they were requested to read. The sample consisted of 440 pupils (220 boys and 220 girls) attending regular classes in an eastern Canadian city.

The findings seem to indicate that the presence of deletion and embedding transformations tended to make sentences and passages difficult for children to read. It appears that

pupils have difficulty processing the information of these structures and consequently experience difficulty in understanding the sentences in which they appear. It was apparent from the findings that sentence difficulty was more dependent on difficulty of transformations than was the content of the passage. The results of the study suggest that since reading comprehension appears to depend upon the type of syntactic structure of the printed language, it would seem that children would find it easier to understand what they read if they could readily analyze the various structures and understand the relationship of the various lexical items in such structures.

Aulls (1975:808-12), in an attempt to relate reading comprehension and writing competency, suggests that there are six propositions about the nature of the two:

> 1. Reading is a process of getting meaning <u>from</u> written symbols. Writing is a process of expressing meaning <u>with</u> written symbols. Yet writing entails reading by necessity as the writer must employ the major aspects of reading while writing. Both processes entail projecting meaning, rereading to maintain direction in thinking about the meaning intended, and weighing what is said against what is intended.
>
> 2. Both reading and writing are learned processes. The quality of the meaning obtained in both processes can be severely diminisned when the mind is primarily involved in the recording of sounds rather than the evolving of ideas.
>
> 3. Reading involves the application of a learned assembly of strategies and levels of thinking to decode the ideas others have expressed. Similarly, writing involves the application of a learned set of strategies and levels of thinking for expressing ideas to others. Both activities essentially draw upon the same language and experiential base from

which meaning is formulated. Both utilize phrase or sentence units as the primary structure for assigning meaning temporarily to a larger context. In short, a consistent cycle of reading and writing experiences increases the child's sensitivity as a reader to syntactic and semantic structures which cue meaning and make it particular or valid.

4. Vital and pleasurable experiences in reading and writing provide a more comprehensive means of internalizing the life-lifting properties of language. To become submerged in the sounds of language and the power of ideas, often leads to a natural relationship between the two.

5. The reader's reactions during reading and the writer's creations during writing are a function of both cognitive and affective operations. In both reading and writing the child struggles to maintain a proper balance between feeling and logical criteria for establishing intended meaning.

6. Reading often requires the ability to assign or deduce meaning from individual words and clusters of words. Writing requires the ability to evoke meanings, often as images of things or sounds, and to choose those which accurately represent ideas, relationships, images and sounds.

These six propositions suggest that reading and writing are both involved with internalizing language and thinking about language, and are not separated in this sense. Through an integrated reading and writing approach, it just may be that many children could begin to internalize much deeper fundamental insights into the function of language and thought.

Harris (1962:6) writes: "Reading and composition are each dependent upon the other. Wide and extensive reading broadens the child's range of knowledge, enriches his vocabulary and provides him with desirable models of style that he can imitate." The concept of the interdependence of reading and writing is supported by Hans Guth (1964:172),

"By and large, the effective writer is the one who has first been a voracious reader." Hildreth (1954:156) states: "In the initial stages of learning to read, any experience with writing benefits reading, no matter what methods are used in reading instruction." The advantage of early writing as an aid to reading is summarized as follows by Hildreth:

> 1. Writing is an active motor-muscular response which produces word patterns that are perceived visually. The motor response aids memory of the letter forms and words.
>
> 2. Learning to write acquaints the beginners with the ABC's. Instead of merely looking at the letters and naming them or trying to spot them in printed words, the child in writing must construct the letters from memory or actively copy them.
>
> 3. No writing can be done without recalling the letter forms and their standard arrangement in common words. Writing and copying words forces the young writer to pay attention to the details in words, to likenesses and differences, peculiarities or unusual features. This process of building up the words, though exactly the opposite of reading, reinforces memory for the distinctive features of a word. On completion of the writing, the learner perceives a whole word with all its parts assembled. Discrimination of similar-appearing words is sharpened by the writing-spelling exercise.
>
> 4. Writing helps pupils to think about individual words, their appearance and construction.
>
> 5. In writing familiar language patterns, the young writer creates material to read, extending the amount of reading material that is easy to understand because it reflects the child's own ideas, vocabulary, and modes of expression. Writing furnishes practice in using words in meaningful sentences, strengthening the association between word forms and their meanings, and increasing the child's familiarity with sentence patterns. The pupil begins to recognize the different kinds of sentences used in expression, and the conventional punctuation of sentences required in writing, all of which contributes to reading comprehension. The value of sentence punctuation for reading becomes more obvious as the children themselves learn to punctuate the sentences they write.

Fernald (1943) in a report of her work at the University of California Clinic School, over a twenty-year period, writes that her experience has indicated that writing is a very valuable aid to reading and vice versa. Sutton (1954) studied the amount of progress a normal group of children might make in reading under normal conditions. She used two fifth-grade classes, one being experimental and the other control; the experimental class wrote stories, poems and reports to be read later by other members of the class. After a four-month period she found the experimental group had made a .9 grade improvement in reading, whereas the control group made only a .35 grade improvement. She concluded that any experience with writing contributes to progress in reading.

The integration of reading and writing activities is considered to be good educational practice. Pooley (1961:87) says: "So far as possible, artificial barriers between the two types of activities should be removed, allowing the child to advance and mature in the conviction that what is written is meant to be read and what is read becomes the substance or point of departure for writing."

Laurita (1972:260) writes: "'Reading to learn' and 'writing to learn' take on new dimensions when both the decoding and encoding aspects of language, are perceived, not as 'topics' to be learned outside of the learner, but rather as internalized 'operations of the mind.'" Their significance in the total development of each individual child becomes more clearly drawn. Disorganization and delay in the develop-

ment of all areas of language function can only result in an ever-widening and diffuse cycle of confusion as new and related learnings must be integrated into a faulty basic sub-structure.

Freud (1953) and Bruner (1970) emphasize the pre-eminence of writing in the stimulation of the perceptual states essential for integrated language functions in that we can see ourselves writing but not speaking! The reading and writing aspects of language are not topics to be learned outside of the learner but are internalized "operations of the mind."

What language activities which predict reading ability do children perform? Particularly, what aspects of writing have the strongest relationship with reading ability? A study by Evanechko et al. (1970:315) was designed to answer these questions. The subjects were 118 grade six students from four classrooms in one school in Victoria, British Columbia. All students were predominantly middle class and used the language arts materials authorized by the province's Department of Education. The Bond-Balow-Hoyt New Development Reading Test and "The Botel and Granowsky Formula for Measuring Syntactic Complexity" were used to measure reading and writing ability.

They found that the mean scores on the X variables, the language measures, showed a wide range in use of the various syntactic features of language. The standard deviations revealed variability in response of students to certain of the indices such as Simple Transformations and

Sentence Patterns B. See Appendix F for a copy of this Syntactic Formula. "In determining the extent of relationships among the measures of syntactic complexity and between these measures and the reading tests, a correlation analysis indicated that among the language measures, 61.5 percent were significant at the .05 level while 75.9 percent of the correlations between language measures and reading measures were significant at .05. These correlations between the reading measures and the language measures are powerfully indicative of the interactive relationship between the receptive and expressive processes in language."

Of the 13 language indices used as predictors, the four contributing significantly to the prediction of reading achievement were the number of Communication Units, Two Count Structures, Sentence Patterns B, and average number of Words per Communication Unit (see Appendix F). The single best predictor was the number of Communication Units.

Further, the evidence suggests that both reading and writing use certain language skills in common and that the presence of these skills should result in better performance in both reading and writing.

Jones (1966), in his thesis, attempted to ascertain whether students' written composition ability, as measured by the STEP Essay Test, is related to students' reading ability, as measured by the Cooperative Reading Comprehension Test, and to their reading habits. Specifically, he investigated the relationship of students' written composition ability to

their reading ability in the presence of four other possible predictor variables: sex, intelligence, socioeconomic status of the family, and the teacher variable. The sample consisted of 147 grade ten students (80 male and 67 female) in the city of Edmonton. The main findings relevant to this study may be summarized as follows (Jones, 1966:82):

> 1. There is a significant relationship between the students' written composition scores and their reading ability scores when the relationship is measured in the presence of the students' intelligence scores, the socioeconomic level of the family, the sex of the pupil, and the teacher variable.
>
> 2. There is a significant relationship between the students' written composition scores and their vocabulary scores when the relationship is measured in the presence of the independent variables.
>
> 3. The effective writers of written composition read a significantly greater number of books per year than do the moderately effective or ineffective writers.
>
> 4. A significantly greater number of effective writers than less effective writers of written composition find reading a pleasurable activity.

Loban (1963) in his study collected and analyzed language used by the same children through their kindergarten and first six years of elementary school. By grade six, 237 subjects out of the 338 original subjects in kindergarten still remained. The subjects were from Oakland, California, and represented a stratified sample of a larger universe of children.

An index of their reading progress was kept from year to year on complete cumulative records. Beginning in the fourth grade, all subjects were tested on the Stanford Achievement Test. Beginning with the third grade, a sample

of the subjects' writing was taken annually, under standard conditions for all. The samples of writing were classified into five categories as follows:

I. Superior

1. Uses well-constructed sentences.
2. Employs a variety of sentence patterns.
3. Uses phrases and clauses skillfully.
4. Uses relational (transitional) words -- yet, however.
5. Has well-organized ideas.
6. Gives time and place.
7. Includes title.
8. Employs vigorous verbs.
9. Employs a vivid, picture-evoking vocabulary, specific rather than general.
10. Uses correct spelling and punctuation.
11. Relates picture content to past or present experiences.
12. Shows awareness of reader.
13. Achieves clarity of content.
14. Has proportion, development and completeness.

II. Good

1. Uses limited sentence patterns.
2. Uses few, if any, relational words.
3. Begins to organize but strays from basis of organization.
4. Displays monotonous vocabulary.
5. Uses reasonably correct spelling and punctuation.
6. Interprets only the obvious, barely achieves interpretation.
7. Fails to be specific; tends to generalities.

III. Inferior

1. Employs weak and faulty sentence structure, indicating lack of understanding.
2. Uses no relational words.
3. Makes no attempt to organize.
4. Employs a limited vocabulary.
5. Uses poor spelling and faulty punctuation.
6. Gives no interpretation or at best an unrelated one.
7. Tends to be fragmentary or, in longer writing, disjointed or formless.

V. Illiterate

1. Achieves only faulty sentences.
2. Employs occasional groups of related words.

3. Fails to complete some words.
4. Uses lists of words, related to the picture.
5. Uses barely comprehensible language and spelling.

V. Primitive

1. Resorts to pictures or drawings.
2. Uses meaningless symbols or tangles of letters.
3. Lists words either unrelated or only partially related to the picture.

In successive years of the study, pupils at the third grade level who wrote well also ranked high in their use of oral language and in their reading. Those who were superior and above average on writing were also above average in speaking and reading. Those who were below on any of the three measures were also below average on the other two. On every statistical measure one fact is extremely clear in the study: those who read well also wrote well; those who read poorly also wrote poorly.

The work of Loban (1963, 1966, 1970) provides the most extensive corpus of data on language development. He noted that the use of tentative, suppositional, or hypothetical thinking and the use of the passive construction and the adverbial clause significantly distinguishes between high and low language ability groups. In his analysis (1970) of his written language samples (from grade four on), Loban found that his high language ability group consistently used more mature syntactic structures.

Hunt (1965:1) in a study using 54 students, sought to develop, first, a procedure for the quantitative study of syntactic structures, "a method of procedure which is coherent,

systematic, broad, yet capable of refinement to accommodate details. Second, he sought for "developmental trends in the frequency of various grammatical structures written by students of average IQ," in the fourth, eighth, and twelfth grades. An analysis of the writing of each student (18 in each grade) revealed that the length of the T-Unit (minimum terminable unit: one main clause plus all the subordinate clauses attached to or embedded within it) was tied closely to maturity. Words per T-Unit appeared to be the best index of syntactic growth; clause length second; the subordination index third; and the fourth best index was sentence length. Hunt concluded that writers' sentences were affected by their syntactic skill, not just by what they had to say. Syntactic maturity consisted chiefly in the ability to make many embedments per clause.

Conclusion

The studies summarized in the preceding pages, many differing to a degree in objectives and approach from this investigation, all are related to the subjects of reading and writing. In the main, all the studies indicate that there is a relationship between reading and writing ability, even though some of the studies may have looked at it in a different light from this investigation.

Studies by Deverell, Page, and Ryle all suggest that the reading activity cannot be understood without also understanding the nature of writing. Other researchers such as

Allen, Vygotsky, Goodman, and Briggs stress the importance of grammar in the overall mental development of the child. The similarity between the sentence structure of a child's oral language and the sentence structure of reading materials is important to reading success. Stoodt, Ruddell, and Bormuth et al. stress that communication is not complete when the reader cannot understand what the author has written. Seeing the interrelationships of sentences is essential to the understanding of a paragraph contend Bond and Wagner, Tinker and McCullough, Williams and Stevens. The integration of reading and writing is important, according to Aulls, Harris, Hans Guth and Hildreth, in that both are involved with internalizing language and thinking about language. Evanechko et al. emphasize that reading and writing use certain language skills in common. In the area of language development Hunt and Loban take prominence. As a result of Loban's findings on the use of syntactic structures and Hunt's units of analysis, reliable techniques for measuring syntactic growth from grade to grade and between ability groups have become evailable.

II. OTHER FACTORS RELATED TO READING AND WRITING

The studies reviewed, clearly indicate that other factors are inherent in the study of reading and writing ability. Three of these factors, sex, socioeconomic status and intelligence, are reviewed in the following section of this study.

Sex differences. During the 1940's, one of the largest research projects on sex differences in school achievement was conducted by Stroud and Lindquist (1942) with 50,000 pupils in more than 300 schools in Iowa. Students in grades three through eight were tested on reading comprehension, vocabulary, word study skills, basic language skills, and arithmetic skills. The researchers found that the girls maintained a consistent and generally significant superiority over boys in all subjects except arithmetic.

A study by Stoodt (1972) indicated that the correlation coefficients between sex and the measures of comprehension of conjunctions show that girls achieved higher than boys on these measures.

In an analysis of about 400 compositions of Israeli school children, both boys and girls in grades two, five and eight, Stahl (1971:205) concluded that "the differences found in the structure of compositions of boys and girls were few and mostly insignificant, but that almost all differences pointed to superiority of girls."

Samuels and Turnure (1974) used a behaviour observation schedule to investigate sex differences in classroom attentiveness and its relationship to reading achievement of first grade boys and girls. Girls were found to be significantly ($p < .01$) more attentive than boys and to achieve higher word recognition scores ($p < .05$).

Larsen et al. (1973), in a study involving 86 boys and 14 girls, found that the factor which was significant in

distinguishing between boys and girls was word recognition. In terms of reading ability, significantly fewer girls had difficulty in recognizing words from a graded list and tended to have less difficulty in reading orally than boys.

Kagan (1969), a psychologist at Harvard University, who has done extensive research into many aspects of human development, points to the differences between elementary and high school grades. In the elementary grades he found that girls out-perform boys in all areas; the ratio of boys with reading problems to girls with the same problems ranges as high as six to one.

The primary purpose of a study by Pollard (1970) was to determine whether reading achievement in rural Newfoundland was related more to socioeconomic than to educational input variables. Using 684 grade six students, 361 boys and 323 girls, he found girls to be ahead of boys in reading achievement by five months on both The Nelson Reading Test 1962 and the Paragraph Comprehension sub-test of The Nelson Reading Test.

These findings are supported by Ralph (1971) who studied socioeconomic factors in the writing ability of grade six students in Newfoundland. Studying 684 students, 361 boys and 323 girls, he found that the mean IQ of the boys was six points below that of the girls, and that girls performed better in spelling, capitalization, punctuation, usage, paragraph writing and total language.

The poor reading achievement of many elementary school boys has been of growing concern to educators. As a result,

there have been many studies designed to investigate this disparity in the reading ability of boys and girls.

Studies, particularly those by Robinson (1955), Gates (1961), Powell (1967), McFarland (1969) and Silberberg (1974), have endeavoured to find reasons for such discrepancies between male and female achievement. Results indicate that girls mature more rapidly than boys and that boys are at a cultural disadvantage in that the schools are more attuned to girls in terms of permissiveness and popularity with teachers.

Socioeconomic differences. Socioeconomic class, parents' education, and the neighbourhood in which children live are some of the factors which shape children's home environments. Studies by Loban (1963), Bernstein (1961), and Hunt (1965) have shown that the higher the socioeconomic status, the better the verbal ability of the child.

A study by Coleman (1966) aimed to discover whether or not inadequate schooling for nonwhite pupils contributed to their failure to learn. Factors such as the socioeconomic status and racial background of students, funds available for school facilities, and salaries of the parents were variously studied. But the final data gathered indicated that inadequate schools simply did not make a significant difference in a given student's achievement. What did count most was the socioeconomic composition of the student body.

Callaway et al. (1974) studied 277 tenth-grade students from rural and small town areas in Georgia. The relationship

between reading and language achievement indicated that the group from homes with the greatest amount of reading material were significantly superior in reading to the group with "more than average" amounts of reading material in the home. In language, in a hierarchial order the group with the greatest amount of reading material in the home was significantly higher than the group having "more than average," "average," and "less than average" amounts of reading material in the home.

Telegdy (1974) compared the readiness performance of 68 low and 68 high (socioeconomic status) children and identified the specific skill differences between the two groups. The tests used were: Screening Test of Academic Readiness, First Grade Screening Test, Bender-Gestalt Test and Metropolitan Readiness Test. The lower SES subjects, regardless of sex, scored significantly less well than the middle SES subjects on all four readiness tests. Approximately four times as many lower SES as middle SES children were not ready for the usual first grade program. The areas in which the lower SES were poorest were letters, numbers, relationships, word meaning and matching.

Sciara and Jantz (1976) considered father absence and its effect on the reading achievement of black children from low income families. Analysis revealed significant differences ($p < .01$) between father absence and each of the factors of sex, IQ, and family status.

In a study, Basil Bernstein (1970) analyzed the speech of lower-class children and adults, then compared

it with an analysis of speech of middle and upper-class people. Bernstein maintains that the communication codes used among lower social classes are restricted in nature. The code tends to depend upon extraverbal cues such as tone of voice, gesture and facial expression, to qualify and elaborate upon personal experiences. Some of the characteristics of this restricted code are:

> 1. Short, grammatically simple, often unfinished sentences with a poor syntactical form stressing the active voice.
>
> 2. Simple and repetitive use of conjunctions (so, then, and).
>
> 3. Little use of subordinate clauses to break down the initial categories of the dominant subject.
>
> 4. Inability to hold a formal subject through a speech sequence; thus a dislocated informational content is facilitated.
>
> 5. Rigid and limited use of adjectives and adverbs.
>
> 6. Infrequent use of impersonal pronouns as subjects of conditional clauses.
>
> 7. Frequent use of statements where the reason and conclusion are confounded to produce a categoric statement.
>
> 8. A large number of statements/phrases which signal a requirement for the previous speech sequence to be reinforced: "Wouldn't it? You see? You know?" etc. This process is termed sympathetic circularity.
>
> 9. Individual selection from a group of idiomatic phrases or sequences will frequently occur.
>
> 10. The individual qualification is implicit in the sentence organization: it is a language of implicit meaning.
>
> (Bernstein, 1967:233-4)

Middle- and upper-classes tend to use what Bernstein refers to as "elaborated communication codes." Language is

used to explicate context. Meanings are more universalistic, freed from assumptions of commonly held context and therefore understandable to all. Some of the characteristics of this code are:

> 1. Accurate grammatical order and syntax regulate what is said.
>
> 2. Logical modifications and stress are mediated through a grammatically complex sentence construction especially through the use of a range of conjunctions and subordinate clauses.
>
> 3. Frequent use of the prepositions which indicate logical relationships as well as prepositions which indicate temporal and spatial contiguity.
>
> 4. Frequent use of the personal pronoun "I."
>
> 5. A discriminative selection from a range of adverbs and adjectives.
>
> 6. Individual qualification is verbally mediated through the structure and relationships within and between sentences.
>
> 7. Expressive symbolism discriminates between meanings within speech sequences rather than reinforcing dominant words or phrases, or accompanying the sequence in a diffused, generalized manner.
>
> 8. It is a language use which points to the possibilities inherent in a complex conceptual hierarchy for the organizing of experience.
>
> (Bernstein, 1967:234)

When lower-class children come to middle-class schools, Bernstein suggests, their low academic performance is a function of their restricted communications code.

Bloom's findings are similar to those of Bernstein:

> In the deprived home, language usage is more limited. Much communication is through gestures and other non-verbal means. When language is used, it is likely to be terse and not necessarily grammatically correct. In any case, it is likely to be restricted

> in the number of grammatical forms which are utilized. Thus, the deprived child enters school inadequately prepared for the typical language tasks of first grade. The greatest handicap seems to be lack of familiarity with the speech used by teachers and insufficient practice in attending to prolonged speech sequences. In the long run, the language which the deprived child has learned at home is likely to be inadequate as an aid and tool in conceptualization. Furthermore, language serves as a means of social distinction which can limit opportunities for mobility.
>
> (Bloom, 1965:70-1)

Milner (1951), Hess (1969), Goldstein et al. (1970) and Moore (1970) support the contentions that children from lower-class homes are less verbal, are inhibited in language development, and achieve less academically than those from higher class homes.

Pollard (1970) indicated than an analysis of his research results using both the product-moment correlation analysis and the multiple regression analysis showed father's occupation and mother's education more closely related to reading achievement than school attendance and other variables.

Ralph (1971) demonstrated that language achievement is closely associated with certain socioeconomic factors of the pupil's environment. Of the four socioeconomic factors considered, father's occupation and mother's education emerged as the most closely associated with pupil language achievement and with pupil intelligence. Teacher's qualifications and size of school were less relevant.

Intelligence differences. Ruddell (1965), using 140 pupils, studied the effect of the similarity of oral and written

patterns of language structure on reading comprehension in relation to many variables, including intelligence. The findings of the study indicated that a significant difference existed between comprehension scores and intelligence.

Meade and Haynes (1975), in a corroborating study, researched the relationship between intelligence and the ability to learn transformational grammar. A sample of 318 grade eight students in Virginia were used. Analysis of the results by use of the correlation coefficient indicated a highly significant positive relationship between intelligence quotients and grammar scores for the sample of students considered. In addition to a general decrease in percentage of correct responses as intelligence quotients decreased, there was an extremely sharp drop in the number answering correctly 75 percent or more of the items when groups one and two, the lowest two IQ groups, were compared with the others: 12 for group three and only one for groups one and two together.

The University of Florida Center for Learning Disabilities studied 100 children, 86 boys and 14 girls, for a two-year period. These children were described on the bases of physical and neuropsychological status, intelligence, level of reading and school achievement and family background. Results of the t-test indicated a strong tendency for normal readers to have a higher verbal IQ than low achieving readers (Larsen et al., 1973:643).

Pollard (1970) found that in both the descriptive and the statistical analyses verbal intelligence was very closely

associated with reading achievement. He continued to say that in the multiple regression analysis, without exception, intelligence explained more of the variations in sixth-grade reading achievement than any other variable. The findings of Pollard are supported by Ralph (1971), in that high correlations were found between verbal intelligence and language achievement.

Conclusion

Many of the studies reviewed indicate that reading and writing are related to three very important factors: sex, socioeconomic status of the family, and the intelligence of the students. Therefore, in any study of the reading and writing abilities of students, these factors should be considered.

CHAPTER III

DESIGN OF THE STUDY

I. SAMPLE

The population consisted of 200 children, the total grade six enrollment in six elementary schools in the educational district of the Roman Catholic School Board for Conception Bay Centre.

The sample of 100 subjects, fifty-one girls and forty-nine boys, was chosen by randomly selecting a number from each of the six schools referred to above. By assigning a number to each subject and using a table of random numbers (Glass & Stanley, 1970:510-512) the sample was selected.

II. INSTRUMENTATION

In this investigation the following measures were used:

1. a Reading Test;
2. an Intelligence Test;
3. a measure of the socioeconomic level of the family;
4. a writing ability formula.

Reading Test

The New Developmental Reading Test, 1968 Edition, Form A, was used in this investigation. This test has five subtests of reading comprehension. The five divisions of the test are described below:

1. "Basic Reading Vocabulary" measures the children's knowledge of words. It tests the ability of the children to recognize words of increasing difficulty and their ability to attach meanings to those words. They are asked to read the first work in the line and then to decide which of the four words following it means the same or almost the same.

2. "Reading for Information" measures the ability of the children to read and understand exactly what the author says, and calls for a precise understanding of a series of paragraphs which increase in difficulty, both in vocabulary and in sentence complexity. This part requires the children to answer questions which test whether they have gained the information specifically stated in the selection. The students are instructed to read the paragraph and to select the word or phrase that best answers the question.

3. "Reading for Relationships" measures the ability of the children to comprehend the organization, grouping, and association of ideas explicitly stated. It also requires the children to understand passages of increasing difficulty and determines the level at which the children can read for precise understanding as well as the level at which they can organize this information for understanding. Students are

instructed to read the paragraph, then answer the questions following the paragraph and select the word or phrase that best answers each question.

4. "Reading for Interpretation" measures a creative kind of reading comprehension that requires the child to interpolate and to extrapolate from the information given. He must think with the facts in a creative fashion so that he can infer, conclude, predict, and judge critically. These comprehension abilities require, at each level of advancement, attention to detail and to the thinking processes involved in reading. For reading to be critical and evaluative, at any level, the reader must learn to be reflective. He must not only understand the information given, but also understand the importance of each concept, evaluate its authenticity, and understand the weight that should be given each idea. The students are instructed to read the paragraph, then read the statements and select the word or phrase that best completes each statement.

5. "Reading for Appreciation" measures literary evaluation and understanding of the selections read and requires the students to be sensitive to the pictureesqueness of description; to grasp the feeling tone; to be sensitive to the motivation of characters; to be aware of visual, auditory, tactile, kinesthetic, and other sensory impressions. Again the students are instructed to read the paragraph and select the word or phrase that best completes each statement.

The total test time is fifty minutes, ten minutes for each subtest. All items are four-choice, and the number of right answers is corrected for guessing in each part, a scoring procedure that greatly reduces the probability that some pupils will obtain higher grade scores by chance.

Validity

Validity refers to the extent to which the results of a measuring instrument serve their intended use. Since the chief aim of The New Developmental Reading Test, Intermediate Level, is to provide teachers and other professional school personnel with bases for judging how well individual pupils perform at present in five well defined domains of pupil behavior, content validity is considered the most important indicator of this test (Bond, Balow, Hoyt, 1968: 17). The authors also say that since the tasks required of the pupil are those which maturing readers are required to do in their reading, then the test has direct, primary validity. The authors of this test consider the test items as "work-samples" of the kinds of reading activities that pupils in the intermediate grades are expected to perform. The paragraphs used in the test have been written at carefully graded levels and their placement within the test has been arranged in order of difficulty as determined by a trial administration of the test to 2,500 children from seven major geographic areas of the continental United States. Item analyses were done on these responses and items revised,

eliminated, or kept in the original form as indicated by the responses of these children. Traxler (1972:698), in his review in The Seventh Mental Measurements Yearbook, points out that the test manual contains a good discussion of the content validity and that it clearly sets forth the reading abilities the test undertakes to measure, the administration and scoring procedures to be followed, the well-conceived standardization procedures used, statistical and other information concerning reliability and validity, tables including three types of norms, and valuable suggestions concerning use of test results. In summary, the test is highly recommended.

Reliability

Reliability is concerned with the consistency of results when the same measurement procedure is applied more than once.

Traxler (1972) reports that the reliability of the test is reported both in terms of internal-consistency coefficients and between forms correlations. This information concerning the test is clearly set forth in the manual. Approximately two hundred pupils at each grade level took both forms of the test to establish the form correlation coefficients. The internal consistency reliability coefficients for each test part and the standard error of measurement were determined by use of the scores of some three hundred and fifty pupils at each grade level. These

data were collected in single school systems of uniformly high quality instruction. Since the variability of scores within a single system is less than that for the total norm sample, the reported between-forms correlations and the internal consistency coefficients are probably somewhat less than would have been found in the total norm sample.

Intelligence Test

The Canadian Lorge-Thorndike Intelligence Test (Multi-Level Edition, 1967), Nonverbal Battery Level D was used in this study. The Nonverbal Battery uses items which are either pictorial or numerical. It contains three sub-tests involving pictorial classification, pictorial analogy, and numerical relationships. The tests in this battery were used because they yield an estimate of scholastic aptitude not directly dependent upon ability to read.

Validity

The items for the Canadian Lorge-Thorndike Intelligence Test were selected so that for the most part they deal with symbolic relationships such as pictorial classification, pictorial analogy, and numerical relationships. In answering most of the items, a pupil is required to discover a principle and then apply it. The tests, then, have been designed to measure reasoning ability. Though data for Canadian pupils have not yet been obtained, experience with similar forms of the Lorge-Thorndike Intelligence Tests in

the United States indicates that the tests correlate quite highly with other well-known measures of intelligence. The Nonverbal Battery correlated in the high 60's and low 70's with the Stanford Binet and with the WISC Verbal Scale. In summary, the Lorge-Thorndike IQ's correlate moderately to fairly highly with school achievement and other IQ's derived from intelligence tests.

Reliability

The standardization of The Canadian Lorge-Thorndike Intelligence Tests involved English-speaking pupils in grades three to nine throughout Canada. A sample size of 4,500 students was used per grade. Odd-even reliability data for the tests, based on representative single-grade samples from the standardization programme, range from .89 to .93 for different grades.

The test has a mean IQ score of 100 and a standard deviation of 16 IQ points.

The fact that The Canadian Lorge-Thorndike Intelligence Test is a group intelligence test makes it quite simple to administer. The three subtests of The Nonverbal Battery used in this study require a total of 27 minutes of actual working time. Each subtest requires 9 minutes to administer. The two or three minutes required between subtests for the giving of instructions permit the students a short rest.

Socioeconomic Status

Blishen's Occupational Class Scale was used as a measure of socioeconomic status (Blishen, 1958:519-531). As a result of the construction and use of occupational scales to serve as an index of social class by many sociologists in the United States, Blishen attempted to devise such an index for Canada. On the basis of the national census data, he selected 343 occupations, calculated their mean income and the average number of years of schooling required, and then computed the standard scores of these two measures. These two standard scores were then combined and each occupation ranked according to this combined score to form the Canadian Occupational Scale. This scale ranges from 32 (hunters and trappers) to 90 (judges) with a mean of approximately 50 and a standard deviation of 10. Blishen contends that this scale gives predominant weight to the amount of responsibility involved and the degree of training required.

The investigator used the school records to obtain the father's occupation. Where this occupation information was not available, further information was sought from the school principal and teachers.

Writing Samples

The instrument used to determine the pupils' Written Composition Ability was an essay written by each pupil. The investigator used a picture for motivation. In deciding on the type of picture to be used, the investigator showed two

pictures, one that was abstract and one that was realistic, to a grade six class not included in the study to decide which one the pupils preferred to write about. On the basis of this pilot study, the abstract picture proved the most intriguing and was thus chosen for the study.

With the picture well displayed on the chalkboard in each classroom studied, the investigator instructed the students as follows:

> This is a picture that can mean different things to different people; it may suggest a different mood or feeling to each one of you. You may imagine where this picture was taken, who are the people in the picture, what is happening, what is going to happen or what has happened. You may want to write about what comes into your mind as you look at this picture.
>
> Write a story or description relating to this picture as it appeals to you. Write as much as you can for a period of 45 minutes. Be careful with your spelling and your punctuation, and try to make your story as interesting as possible.

The foregoing instructions were given to each group of students, and any student questions were answered before they started working. Sample questions some students asked were: "How long does it have to be?" to which the investigator replied: "It is your story." Another question asked was: "Is there a right or wrong answer to the picture?" to which the investigator replied: "I am interested only in what you think the picture means." Students usually spent three to five minutes looking at the picture and thinking before starting to write. Approximately ninety-five per cent of them found the forty-five minutes to be ample time to write the essay.

An indication of a student's expressive writing ability was sought in this study rather than solely his ability in the mechanics of writing; therefore a standardized test of basic skills was not used. A correlation was sought between vocabulary, self-expression, style and sentence structure as obtained from the Writing Ability Formula with vocabulary, reading for information, reading for relationships, reading for interpretation and reading for appreciation as obtained from the reading test. To summarize, a correlation was sought between one's ability to write and one's ability to read.

There were three variables to be considered in the selecting and marking of the students' written compositions. These variables, (1) the assignment variable, (2) the writer variable, and (3) the rater variable, are discussed in the following paragraphs.

The assignment variable. It is a well researched fact that the topic assigned to be written about must be selected with a great deal of care. The investigator used a pilot study, as indicated previously, to ensure that the picture used to motivate their writing was acceptable and of interest to the students. Thus the pilot study ensured that the picture was not too abstract and that all students were capable of and interested in writing about it.

The writer variable. Braddock et al. (1963:6) point out that composition examinations, although they are often referred to as measures of writing "ability", are "always

measures of writing performance: that is, when one evaluates a sample of student's writing, one cannot be sure that the student is fully using his ability, is writing as well as he can." The student in any situation is subject to any number of distractions such as sickness, emotional upsets and many other variables which can cause variances in his performance.

Kincaid (1963:84), in his study, concluded that:

> A single paper written by a student on a given topic cannot be considered as a valid basis for evaluating his achievement in a writing course any time, unless that student's writing ability was rather low; and, even then, a single paper would not provide an infallible basis for such an evaluation.

Despite the well supported arguments in favour of more than one sample of each student's writing, it is common practice in the schools for a student to be evaluated on the basis of one writing sample at examination time. Moreover, in this study the students had a fair degree of flexibility because they could write about whatever came into their mind as they looked at the picture used. It was decided to use only one writing sample from each student due to time, transportation and the cost involved.

The rater variable. Research indicates that inter-rater variations exist in composition marking; however, because of the type of Writing Ability Formula used in this study, the marking was fairly objective. For instance, the investigator simply looked for specific features in the

compositions, such as the number of adverbs, adjectives, phrases, clauses, actions, details of time, place and names, the number of actions indicated, examples of figurative language, emotions, appeal to the senses, the number of personal responses indicated, the types of sentence used and vocabulary.

Writing Ability Formula

This section is concerned with the formulation of criteria to measure writing ability, based on previous research in the area of writing ability.

The criteria for the formula used in this investigation are based on the results of research presented by such authors as Loban (1963), (1966), (1970), Hunt (1965), Christensen (1968), McFetridge et al. (1969), Brown (1969), Evanechko et al. (1974), and Stotsky (1975).

In order to understand the inclusion of some and exclusion of other language measures in the writing ability formula used in this study, a thorough discussion is given of each measure.

The formula* used consisted of four main headings: (1) Type-Token Ratio, (2) Self-Expression, (3) Style, and (4) Sentence Structure.

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*See Appendix B for the Writing Ability Formula.

The main headings with their accompanying subheadings, descriptions, and related research are presented as follows:

1. Type-Token Ratio is defined as the ratio of the number of different words (types) to the total number of words (tokens) in a sample of language. This ratio is a measure of the diversity of vocabulary. It was used as early as 1944 by Johnson and Chotlos as a measure of verbal diversification. It was used in studies by Loban (1963), (1966), (1970) to measure the diversity of vocabulary used by students in their writing. In order to be consistent in measuring the diversity of vocabulary used by students, Loban divided all transcripts of the subjects' language into segments of 100 words and in each segment counted only the new words that had not appeared before in any preceding segment. McFetridge et al. (1969) also used the Type-Token Ratio. They were consistent in that they counted only the proportion of new words in fifty running words of discourse taking the first and last twenty-five words. Results of the studies by Loban (1963) and McFetridge et al. (1969) indicate that a writer or speaker who uses a large vocabulary has a more diversified style than one who uses a small vocabulary. Thus the Type-Token Ratio was considered to be a useful measure of language development in the present study. The investigator of this study counted the number of new words in the first 44 words of each student's transcript.

2. Self-Expression may be defined as the expression by the individual in words to convey mood, feeling, emotions and

appreciation. The subheadings of this section are: (a) emotions, (b) senses, and (c) personal responses.

(2a) Emotions may be defined as the words one uses to express a strong surge of feeling such as love, hate or joy. Some examples utilized by the grade six students in this study are: "I love to imagine that there are creatures living on other planets." Another student wrote: "I was scared the whole time I was with the U.F.O. men."

(2b) Senses may be defined as the words one uses to express taste, touch, hearing, smell or sight. Some examples utilized by the grade six students in this study are: "The buzzing sould of the spaceship frightened me," "The spacemen felt like concrete," and "The coffee was thick and slimy."

(2c) Personal responses were thought of as opinions and whether the writer's relating of his work to past or present experiences occurred. Some examples of personal responses by the students in this investigation are as follows: "The spacemen in the coffee shop reminded me of a dream I once had," "I was lonely so I talked to the concrete men because they looked lonely too and I know talking to other people helps," and "I think the people in this picture are men from another planet."

Brown (1969:48) writes: "The inclusion of sensory impressions in a pupil's writing gives it individuality, and allows the reader to experience more fully that which has stimulated the child to write." In a study by Loban (1963), five categories were used for classifying the writing samples.

In his first category, entitled "Superior", the concept of self-expression was used to classify a student as to whether or not he fitted into this category. McFetridge et al. (1969) also used self-expression under the heading "Semantics" in their formula and reported that as children mature, they tend to replace factual statements with interpretations. The use of self-expression in their writing was considered to be of utmost importance because it increases the writer's facility with language, and it adds vitality and sincerity to the student's writing.

3. Style is a difficult concept to define since every writer and speaker has his own notion of the term. In general, style is a manner or mode of expression in language, a way of putting thoughts into words. Included under style are three main headings with various subheadings. Each is described as follows:

1. Details may be defined as the degree to which an individual supplies particulars. Details make more vivid a word picture of a person, place, thing or event; they are the specific facts that give writing vigor. The details used in this investigation are (a) Time, (b) Place, (c) Names, (d) Title, (e) Actions. Examples of each are given as follows: (a) Time was considered to be a detail if stated explicitly, for example, "March 19, 1975" rather than general expressions such as "one day" or "one year"; (b) Details of place were also investigated for explicitness. A student writing "at the coffee bar" was thought to be more specific than one

writing "at the bar"; (c) Names written by students, for example, "John Smith", or "Mary Doe", were more explicit than "a man" or "a woman"; (d) Students giving their stories a title were considered to be more explicit than those not including a title. The title is the name of the story, a very brief summary of its subject, a clue. The exclusion of a title may indicate that the writer does not really know what he is writing about; (e) Actions may be thought of as events used by the students to give their writing more force through suggestive, vigorous, picture-making words. The following examples of writing from two students illustrate this point. One student wrote: "Once I was walking in a creepy basement and I saw two men, one standing up, one sitting down. The two men were at something. They were dressed in white I began to get afraid. The two men turned around and looked at me then they ran after me." In this sample only two actions are indicated.

Another student wrote a similar story as follows: "One day I strolled into a restaurant and saw two concrete-looking men. They stared at me spreading their arms towards me. I shivered with fear. They burst towards me, I jumped and raced to the door. I hunched low so I could run faster as the wind gushed by me I knew they wouldn't catch me." In this sample nine actions were used. The second sample shown here gave more details in that the reader sensed the movement of action, commotion and haste.

Loban (1965) included in his "Superior" category students who utilized details of time, place and a title. Actions and names were felt to be important aspects of good writing as well in this study.

Brown (1969:83) writes that the inclusion of details is important to writing; it "reveals the author's sensitivity to and awareness of his environment. It helps us determine whether or not the author has his eye on his object."

2. Modification can be thought of as a word or group of words which makes the meaning of other words more exact by limiting or restricting them. The modifiers of nouns are adjectives, adjective clauses, adjective phrases, and participles. The modifiers of verbs, adjectives, and adverbs are adverbs, adverbial clauses, and adverbial phrases. Under modification the investigator checked only for (a) adjectives, (b) adverbs, (c) clauses (adjective and adverb), and (d) phrases. These modifiers were the ones most often used by the grade six students in this study. Gerunds and participles were omitted from the formula because they were not used by the grade six students in this investigation.

Following are a definition and examples of each of the subheadings under modification and an explanation of why each was used in the formula:

(a) Adjectives modify a noun by describing or limiting, or in some other closely related way make meaning more exact. An adjective may indicate quality or quantity, may identify

or set limits. Students wrote sentences using adjectives such as: "The concrete men frightened me," "The haunted house was the hideout for the three robbers," and "The luminous spaceship landed in the swampy pasture." Adjectives were included in the formulas used by researchers such as Loban (1963), Hunt (1965), McFetridge et al. (1969) and Evanechko et al. (1974).

(b) Adverbs modify a verb, an adjective, or another adverb. Students wrote sentences using adverbs such as: "The monsters almost caught me," "The plastic men walked very slowly," and "The two men in the bar talked quietly." Adverbs were also included in the formulas used by the researchers referred to in the previous paragraph. Tufte (1971:79) writes on the importance of adjectives and adverbs to writing: "When properly chosen and located, adjectives and adverbs are able to clarify, qualify, or intensify an idea, to enlarge and enliven it. They can be arranged around it or piled upon it, bound to it or set free from it - all in any number of productive ways." One cannot deny the importance of adjectives and adverbs because, along with nouns and verbs, they constitute the four main groups of content words in English, words that carry content or meaning. Nouns and verbs are essential to any sentence, but the adjectives and adverbs are the words that carry the actual information. It was therefore felt that adjectives and adverbs are necessary to this formula.

(c) A subordinate clause may be defined as groups of words which cannot stand alone, but which have both a subject

and a predicate. In this study the investigator studied only adjective and adverb clauses, both under the single heading clauses. Some examples of adjective clauses written by the grade six students in this study are: "The clothes which they wore was scary," "The mummies who came in the restaurant were people from another planet," and "They were people I never saw before." Examples of adverb clauses written by the students are: "I ran faster than I ever did before," "I got scared when the spacemen came in, and "I will never go in a haunted house again when I get out of here."

(d) Phrases may be defined as groups of related words which do not contain both a subject and a predicate. Some examples of phrases written by the students in this study are: "The men in the bar were drinking," and "The concrete men wore big boots and had their feet on the floor."

Loban (1963) and McFetridge et al. (1969) included adverb and adjective clauses in their studies under the term "subordination index." Hunt (1965), however, used them as a ratio of subordinate clauses to main clauses. Loban (1965) rated as "superior" those students who utilized phrases and clauses in their writing. Loban (1965:17) writes, "Both logical analysis and previous studies of language designate subordination as a more mature and difficult form of language expression than simple parallel statements connected by "and" or "but". Phrases and dependent clauses are a means of showing relationships; through them, speakers communicate more complex propositions than are possible with simple independent

clauses. Furthermore, subordination makes possible a more coherent organization of related statements." Loban found a more consistent use of subordinate clauses by those students scoring high in writing ability than by those scoring low in writing ability. Hunt (1965) and McFetridge et al. (1969) also found subordination to be an index of writing maturity. Therefore clauses and phrases were thought to be important criteria to include in this formula.

3. Figurative language involves the use of figures of speech, such as simile, metaphor, and personification. Figurative language was a criterion measure in the formulas used by Loban (1963) and McFetridge et al. (1969). Since figurative language is an important aspect of control of language, and since examples of figurative language were used by the students of this study, it was decided to use it as a criterion measure. Brown (1969:104) states: "It is through the figurative use of language that the writer can come close to expressing the essence of his experience; it allows him to see and crystallize affinities between objects, which further open up new and rich experiences." Thus the importance of figurative language to writing should not be underestimated. The figurative language checked for in this investigation included the following:

(a) Simile is a figure of speech by which are compared two things essentially different but thought to be alike in one or more respects. The point of resemblance is expressed by like, as, as if. Some examples of similes

employed by students in this investigation are: "The concrete men were as hard as rock," and "The spaceship shot through the air like a bullet."

(b) Metaphor is a figure of speech in which a term or phrase is applied to something to which it is not literally applicable. This is done in order to suggest a resemblance. Some examples of metaphors used by the students in this study are: "The spaceship is a perfect bird, it flies easy and fast," and "The bank robbers stepped on the gas when they heard the cops."

(c) Metonymy is the use of the name of one thing for that of another to which it has some relation. Examples used by students in this investigation are: "Two men came in the bar and had a drink," and "The robbers told the bankers to hand over the coins."

(d) Personification is a figure of speech in which human attributes are given to an animal or to an inanimate object, or to the representation of an idea or quality in the form of a person. Some examples used by the students in this study are: "The spaceship flew through the air," and "I ran from the concrete men so fast that my clothes whistled."

(e) Hyperbole is an extravagant expression not intended to be taken literally, an obvious and deliberate exaggeration. Some examples used by the students in this study are: "The U.F.O. men frightened me to death," and "The footsteps of the mummies could be heard for miles."

(f) Irony is a figure of speech in which the literal (denotative) meaning of a word or expression is the opposite of that actually intended. Some examples used in this study by the students are: "Thank you, for waiting until tomorrow before you kill me," and "The drunk man went home and his wife said, 'have a drink because you haven't had any all day'."

(g) Comparison was included under figurative language because they were felt to be similar in nature, similar in the sense that comparison involves the change in the form of an adjective or adverb to indicate greater or smaller degrees of quantity, quality, or manner. Some examples of comparison used by the students in this study are: "The mummies were the funniest looking men I ever say," and "The concrete men felt harder than rock."

Other figures of speech such as apostrophe and anthithesis were not employed by the students in this investigation, and were therefore not included in the formula.

4. Sentence Structure may be thought of as the different ways in which words, phrases and clauses are formulated into sentences. The subheadings of sentence structure are as follows:

(4a) Number of subordinations means the total number of adjective, adverb and noun clauses employed by the students. The importance of this criterion was discussed under clauses and phrases.

(4b) Sentence Variety means that sentences may be classified

according to meaning and purpose. An interrogative sentence asks a question. An imperative sentence expresses an entreaty or command and an exclamatory sentence expresses strong feeling. Sentence variety was included in the study by Evanechko et al. (1974) and results of the study indicate that the child's competence in the use of a variety of structures adds to the sophistication of expressions in language. Tufte (1971:175) writes: "The three common reshapings of the basic sentence pattern carry 'time-honored labels' interrogative, imperative, and exclamatory. They can help to set tone, to bring a point into focus, or to emphasize it. They can serve as summary or transaction, and they can be arranged in parallel sequences to form a cohesive framework over the space of a paragraph or several paragraphs." (4c) Sentence Inversions are instances in which the verb precedes the subject. Some examples of sentence inversions written by the students in this study are: "From the sky came the U.F.O.'s," and "Licking his lips, the monster looked at me." Sentence inversion is a technique of varying one's expression and is a way of giving emphasis to a particular thought.

The measures discussed are considered to be aspects of good writing ability, thus vital to the writing ability formula devised for this investigation.

Measures such as clause length, communication units and sentence length were omitted from this formula because research indicates they would not contribute any information.

Christensen (1968) criticizes clause length as a measure of language ability, because clause length is increased by adding and embedding rather than actual writing ability. Christensen also points out that the communication units used by Loban or the T-units used by Hunt are not a reliable index of maturity in writing. He also criticizes sentence length as a reliable measure of writing ability, because one of the least able grade four students in Hunt's study wrote sentences longer than those written by students in grade twelve.

III. DATA COLLECTION

A letter was written to the Superintendent of the Roman Catholic School Board for Conception Bay Centre requesting permission to study the grade six classes within its jurisdiction. The Superintendent replied, granting permission and assuring complete cooperation.

The testing schedule began on May 17, 1976 and ended on May 31, 1976. The first three days included the administration of The Canadian Lorge-Thorndike Intelligence Test in the six schools. A half day session was used in each school for the three day period. The remaining six days involved the administration of The New Developmental Reading Test in the morning session and the collection of the students' writing samples in the afternoon session at each school. A copy of the testing schedule is included in Appendix G.

Between testing periods at each school, the investigator collected the data on the socioeconomic status of each student studied. The students' cumulative records generally provided this information; in cases where this information was not available on file, the school principal was contacted for it.

IV. PROCESSING THE DATA

Scoring

At the end of each day of testing the investigator sorted out the day's tests and began the marking. The intelligence test and the reading test were hand scored by the investigator. The writing samples were scored by the investigator on the basis of the writing ability formula devised for that purpose as described in detail in the preceding section.

A one point system was consistently used in the scoring of a student's writing ability. For example, each time a student used a word as an emotion, one point was given; for each time a student used an adjective or an adverb, one point was given. This means that for every instance in which a student used one of the criterion measures, a point was given. As previously indicated the writing ability formula consisted of four main parts:

1. Type-Token Ratio which was standardized to be marked out of a total possible score of 44. Forty-four words were chosen

because several of the students studied wrote only short samples. The shortest sample consisting of forty-four words then set the standard to be used in order to have consistency in marking. Thus the proportion of new words in 44 words of writing was studied.

2. Self-Expression: for each time a student indicated an emotion, appealed to the senses or gave personal responses, a point was given. These three measures constituted the total score for self-expression.

3. Style: for each time a student used any of the criterion measures indicated on the formula a point was given. Three subscores, a subscore on details, a subscore on modifications and a subscore on figurative language were also used by the investigator. Though they were classified as style they were thought to be sufficiently different.

4. Sentence Structure: for each time a student used any of the criterion measures indicated on the formula, a point was given.

A total writing score was obtained by the summation of the scores on each criterion measured.

Coding

Within one month of the completion of the testing period, all tests and writing samples had been scored. The results were then tabulated and coded for processing by the Memorial University Computer Services.

Each pupil was assigned a number starting with 001 and finishing with 100. The sex of each pupil was coded as 01 male and 02 female.

On the Blishen Scale the father's occupation was assigned a number between I (high) and VII (low).

The I.Q. scores, reading scores and writing scores were simply recorded as determined by the test or the measure used.

These data were punched on I.B.M. cards, and the analyses discussed below carried out by computer, using the "Statistical Package for the Social Sciences", at Memorial University of Newfoundland.

Computing

The following types of analyses will be reported: Pearson Product-Moment Correlations, t-test of significance for correlations obtained, Chi Square and a descriptive analysis.

Pearson Product-Moment Correlation

Pearson Product-Moment Correlation was determined between the following variables: between total reading and total writing, that is, between the total score on the reading test and the total score on the writing formula; between the subscores on reading and the subscores on writing; between intelligence and total reading; between intelligence and total writing; between socioeconomic status and total reading,

and between socioeconomic status and total writing.

The formula used in calculating the correlation coefficient between the criterion variable and each of the predictor variables was the computation formula which gives the Pearson Product Moment Correlation Coefficient

$$r_{xy} = \frac{n\Sigma x._1 - (\Sigma x._1)(\Sigma y._1)/n}{\sqrt{[\Sigma x_1^2 - (\Sigma x._1)2/n][\Sigma y_1^2 - (\Sigma y_1)2/n}}$$

where n is the number of paired observations of x and y, where x in each case is the criterion variable and y in each case is one of the predictor variables under study (Glass and Stanley, 1970:113-114).

T-Test of Significance for Correlations

The t-test of significance was carried out on each of the above correlations to determine if they were statistically significant and the level at which these correlations were significant.

The formula used in testing the significance of the correlation obtained between the criterion variable and each of the predictor variables was the following t-test:

$$t = \frac{r_{xy}}{\sqrt{(1 - r^2xy)/n - 2}}$$

where r_{xy} is the product-moment correlation coefficient between variables x and y, and n is the number of paired observations of the criterion variable x and the predictor

variable y (Glass and Stanley, 1970:308-310).

Chi Square

Chi Square is a test of statistical significance. It helps to determine whether a systematic relationship exists between two variables. For purposes of this study, the Chi Square was used to determine whether or not a relationship exists between sex and reading, and sex and writing.

The Chi Square formula used on the data for this study as stated by the SPSS Computer Package is as follows:

$$x^2 = \sum_i \frac{(f_o^i - f_e^i)^2}{f_e}$$

where f_o^i equals the observed frequency in each cell, and f_e^i equals the expected frequency calculated as

$$f_e^i = \frac{(c_i r_i)}{N}$$

where c_i is the frequency in a respective column marginal, r_i is the frequency in a respective raw marginal, and N stands for the total number of valid cases.

The SPSS Computer Package also gave a Contingency Coefficient which is a measure of association based upon Chi-Square. The formula used is as follows:

$$c = \frac{(x^2)\frac{1}{2}}{(x^2 + N)}$$

Descriptive Statistics

The mean, range and standard deviation were computed for I.Q., total reading, total writing, reading vocabulary, reading for information, reading for relationships, reading for interpretation, reading for appreciation, type-token ratio, self-expression, details, modification, figurative language and sentence complexity. This was done primarily to give the reader an overall view of the performance of the pupils.

CHAPTER IV

FINDINGS AND DISCUSSION

The purpose of this chapter is to present the descriptive statistics, to examine the correlations between the variables, and to discuss the findings.

I. DESCRIPTIVE STATISTICS

Descriptive Statistics are presented in Table 1 to give the reader a general picture of overall pupil performance.

The distribution of the students according to the Blishen Occupational Class Scale is presented in Table 2.

According to the Blishen scale, 76 per cent of the students studied were in the lowest three classes. The relationship of socioeconomic status to reading and writing will be discussed under the appropriate hypotheses.

Hypothesis 1

There will be no significant relationship between reading ability and written composition ability.

Findings

The Pearson Product-Moment Correlation coefficient between total reading scores and total writing scores revealed

TABLE 1

MEAN, STANDARD DEVIATION, SKEWNESS, AND KURTOSIS FOR STUDY SAMPLE (N=100)

Variable	Mean	Standard Deviation	Skewness	Kurtosis
TOTAl WTG	158.61	34.61	0.865	0.703
TOTAl RDG	44.34	17.59	0.113	-0.617
RDG VOCAB	28.16	8.99	-0.179	-0.446
RDG INFO	14.20	5.74	0.162	-0.131
RDG RET	9.96	4.84	0.078	-0.558
RDG INT	8.82	5.08	0.199	-0.428
RDG APP	11.35	5.03	0.030	-0.657
T.T.R.	75.22	7.50	-0.375	0.774
SELF EXPR	4.35	1.43	0.470	-0.124
DETAILS	23.90	9.51	0.956	0.837
MODIF	39.18	16.77	1.076	1.078
FIG LANG	3.39	1.83	1.021	1.592
SENT COMP	12.74	5.63	0.704	-0.070
I.Q.	96.94	15.69	0.447	-0.727

NOTE: For the purposes of this study, the normal curve is represented by a skewness of 0 and a kurtosis of 0.

The key to the mnemonics is as follows:

TOTAl WTG = Total Writing
TOTAl RDG = Total Reading
RDG VOCAB = Reading Vocabulary
RDG INFO = Reading for Information
RDG RET = Reading for Relationships
RDG INT = Reading for Interpretation
RDG APP = Reading for Appreciation
T.T.R. = Type-Token Ratio
SELF EXPR = Self-Expression
DETAILS = Details
MODIF = Modification
FIG LANG = Figurative Language
SENT COMP = Sentence Completion
I.Q. = Intelligence Quotient

TABLE 2

BLISHEN OCCUPATIONAL CLASS SCALE OF STUDY SAMPLE (N=100).

Father's Occupational Classes	Range of Each Class	Number in Each Class
I	73.2 - 90.0	1
II	57.0 - 72.9	10
III	52.0 - 56.9	4
IV	50.5 - 51.9	9
V	54.1 - 50.4	21
VI	41.8 - 45.0	26
VII	32.0 - 41.8	29
TOTAL		100

a correlation coefficient of .55, significant at the .001 level. This correlation revealed that total reading ability correlates significantly with total writing ability. That is, knowledge of the students' writing ability scores enables one to make a prediction of students' reading scores. On the basis of this finding, hypothesis 1 was rejected. This relationship is illustrated in the scatter diagram of Figure 1.

This scattergram was done by computer, using the SPSS program. The computer also calculated the y intercept (A) as 0.22982 and the slope (B) as 0.27810. The equation for predicting reading scores, given the writing scores, would then be:

$$y = 0.22982 + 0.27810\ (X).$$

For example, if a student scored 110 on writing, his predicted reading score would be 30.8.

$$y = 0.22982 + 0.27810\ (110)$$

$$y = 0.22982 + 30.591$$

$$y = 30.8$$

As can be seen, the regression line is a method to predict reading scores from writing scores.

The subscores of reading were correlated with the subscores of writing. A matrix of all possible correlations is presented in Table 3 to give a more detailed correlation description between reading ability and writing ability. To facilitate interpretation each reading subscore which is correlated with all writing subscores will be presented separately.

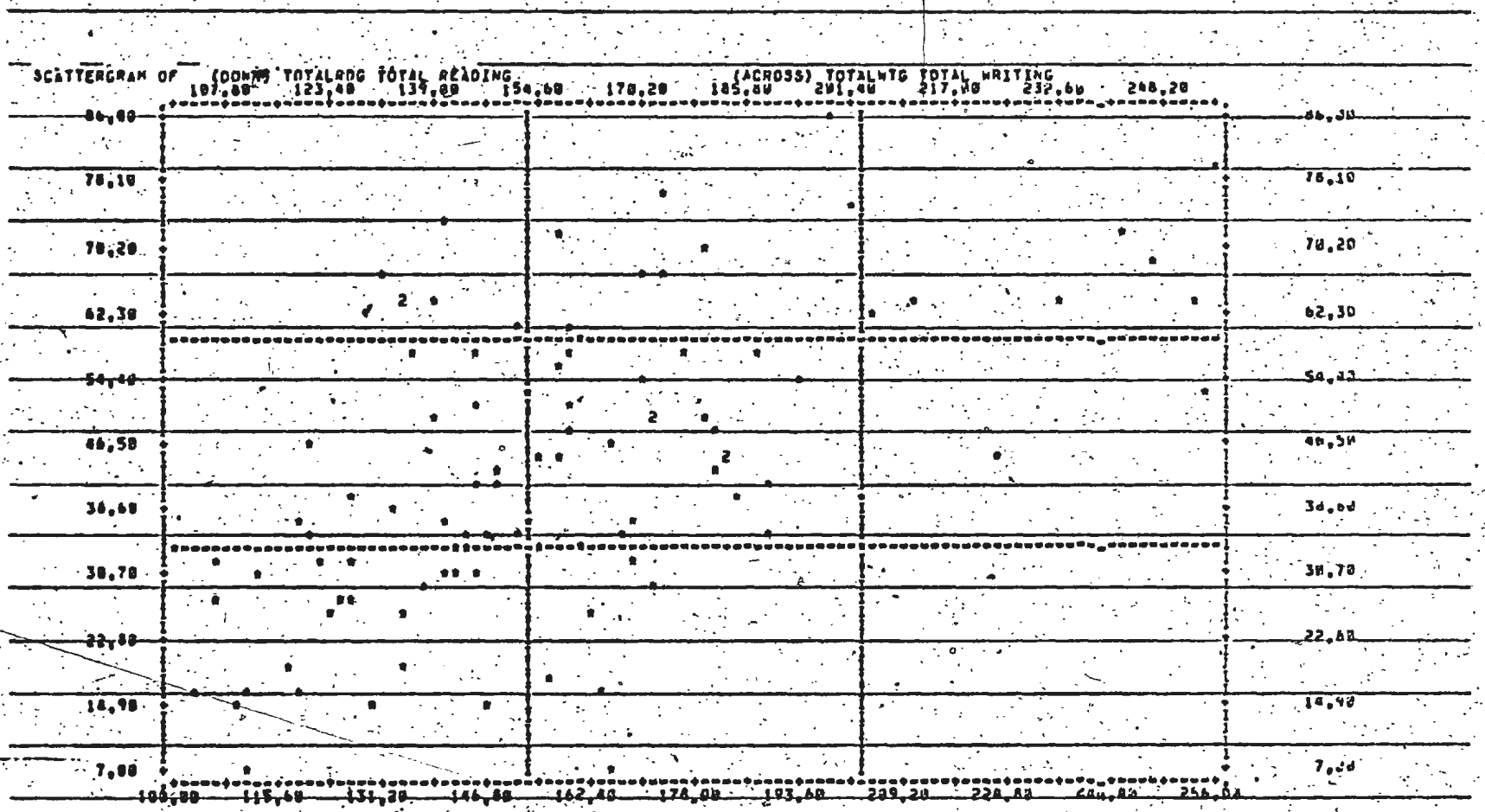

FIGURE 1. SCATTERGRAM OF RELATIONSHIP BETWEEN TOTAL READING AND TOTAL WRITING

TABLE 3

PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENTS BETWEEN THE READING SUBSCORES AND THE WRITING SUBSCORES

	TTR	SELF-EXPR	DETAILS	MODIF	FIG LANG	SENT COMP
RDG VOCAB	.35	.45	.38	.41	.48	.51
RDG INFO	.36	.46	.32	.43	.36	.48
RDG RET	.35	.41	.40	.40	.37	.45
RDG INT	.32	.33	.32	.37	.21**	.40
RDG APP	.38	.37	.25*	.38	.36	.43

*Significant at .01
**Significant at .05
All other correlations not marked with an asterisk are significant at .001.

The key to the mnemonics is as follows:

RDG VOCAB = Reading Vocabulary
RDG INFO = Reading for Information
RDG RET = Reading for Relationships
RDG INT = Reading for Interpretation
RDG APP = Reading for Appreciation
TTR = Type-Token Ratio
SELF EXPR = Self-Expression
DETAILS = Details
MODIF = Modifications
FIG LANG = Figurative Language
SENT COMP = Sentence Completion

The Pearson product-moment correlations of reading vocabulary and the subscores of written composition were as follows: Type-Token Ratio .35, self-expression .45, details .38, modifications .41, figurative language .48, and sentence complexity .51, all correlations significant at the .001 level. On the basis of these findings, it seems that those students who exhibited the highest performances on the writing subscores also attained the highest scores on reading vocabulary.

The Pearson product-moment correlations of reading for information and the subscores of written composition were as follows: Type-Token Ratio .36, self-expression .46, details .32, modifications .43, figurative language .36, and sentence complexity .48, all correlations significant at the .001 level. These findings indicate that with a knowledge of the writing subscores one can make a prediction of students' reading performance. Those students who achieved the greatest diversity in their writing also achieved the highest levels of performance in understanding a series of paragraphs which increase in difficulty both in vocabulary and in sentence complexity.

The Pearson product-moment correlations of reading for relationships and the writing subscores were as follows: Type-Token Ratio .35, self-expression .41, details .40, modifications .40, figurative language .37, and sentence complexity .45, all correlations significant at the .001 level. It seems that those students who score high on the writing

subtests are also most proficient in the comprehension, organization and association of ideas explicitly stated in reading.

The Pearson product-moment correlations of reading for interpretation and the writing subscores were as follows: Type-Token Ratio .32, self-expression .33, details .32, modifications .37, figurative language .21, and sentence complexity .40, all correlations significant at the .001 level except figurative language which is significant at the .05 level. Those students who performed the highest on the writing subtests also performed the highest in interpolating and in extrapolating from the information given in reading. The students were able to think with the facts in a creative fashion -- to infer, conclude, predict and judge critically.

The Pearson product-moment correlations of reading for appreciation and the writing subscores were as follows: Type-Token Ratio .38, self-expression .37, details .25, modifications .38, figurative language .36, and sentence complexity .43, all correlations significant at the .001 level except details which is significant at the .01 level. Those students who attained the highest scores on the writing subtests also attained the highest scores on reading for appreciation, which requires such reactions as: sensitivity to the picturesqueness of description; grasping the mood; sensitivity to the motivation of characters; and awareness of visual, auditory, tactile, kinesthetic, and other sensory impressions.

Discussion

The purpose of this section is to discuss the findings. The format of the section will include a discussion of hypothesis 1, as well as a discussion of the correlation of the subscores for reading and the subscores for written composition. All were tested using the Pearson product-moment correlation coefficient.

It has been previously stated that hypothesis 1 was rejected. The alternate hypothesis was accepted: There is a significant relationship between reading ability and written composition ability. A correlation coefficient of .55, significant at the .001 level, between total reading and total writing revealed a high, positive correlation between the two.

As can be seen in Table 3, the high, positive correlations on all subscores give a powerful and a detailed indication of the nature of the relationship between reading and writing. It was found that among the measures of writing ability and reading ability, twenty-eight out of thirty (93.3 per cent) were significant at the .001 level. The remaining two correlations were significant at the .01 and .05 levels of significance. These correlations are powerfully indicative of the interactive relationship between reading and writing.

Of the six language indices correlated with reading, sentence complexity in the main correlated the highest with the reading subscores, as can be seen in Table 3.

This evidence suggests that the writing skills measured in this study are some of the common language skills underlying reading achievement and that the presence of these skills in both reading and writing should result in better performance in the two and that developing the skills in writing may well improve reading performance.

Hypothesis 2

There will be no significant relationship between reading ability and the following variables:

(a) Sex

(b) Socioeconomic Status

(c) Intelligence

Findings, Hypothesis 2a

The chi-square formula was used to determine whether a systematic relationship exists between reading ability and sex. A chi square of 16.17 with 15 degrees of freedom and a significance level of .37 was found in this study, which means that there is no significant relationship between total reading ability and sex.

Discussion

As previously stated the chi-square of 16.17 is not significant, thus hypothesis 2(a) is accepted. That is, there is no significant difference between male and female perform-

ance in total reading ability.

This finding refuted the work of other researchers in the area of reading, such as Lindquist (1942), Pollard (1970) and Larsen et al. (1973). For example, Lindquist found that girls maintained a consistent and generally significant superiority over boys in reading comprehension, vocabulary, word study skills, and basic language skills.

Findings, Hypothesis 2b

The Pearson product-moment correlation coefficient between total reading and socioeconomic status revealed a correlation coefficient of -0.48, significant at the .001 level. On the basis of this finding, one may conclude that those students who were rated low on the Blishen Scale (socioeconomic status) were the same students who scored high on reading performance. Thus hypothesis 2(b) is rejected and the alternate hypothesis accepted. That is, there is a significant relationship, though a negative one, between reading ability and socioeconomic status. This negative finding is difficult to explain since the different studies presented in Chapter II of this thesis indicate that there is a positive relationship between reading and socioeconomic status. It should be pointed out, however, that the Blishen Scale is not a good discriminatory tool, because it does not distinguish, for example, between the different types of fishermen or the different types of truckdrivers. Possibly the use of a more locally valid index might have revealed a

positive relationship between reading ability and socioeconomic status.

Findings, Hypothesis 2c

The Pearson product-moment correlation coefficient between intelligence and reading ability revealed a correlation coefficient of .47, significant at the .001 level. On the basis of this finding, one may conclude that those students who scored highest on intelligence also scored highest on reading ability.

Discussion

As previously stated, a significant relationship exists between intelligence and reading ability, thus hypothesis 2(c) is rejected. The alternate hypothesis being accepted is: There is a significant relationship between reading ability and intelligence. A scattergram of this relationship is presented in Figure 2.

Hypothesis 3

There will be no significant relationship between written composition ability and the following variables:

(a) Sex

(b) Socioeconomic Status

(c) Intelligence

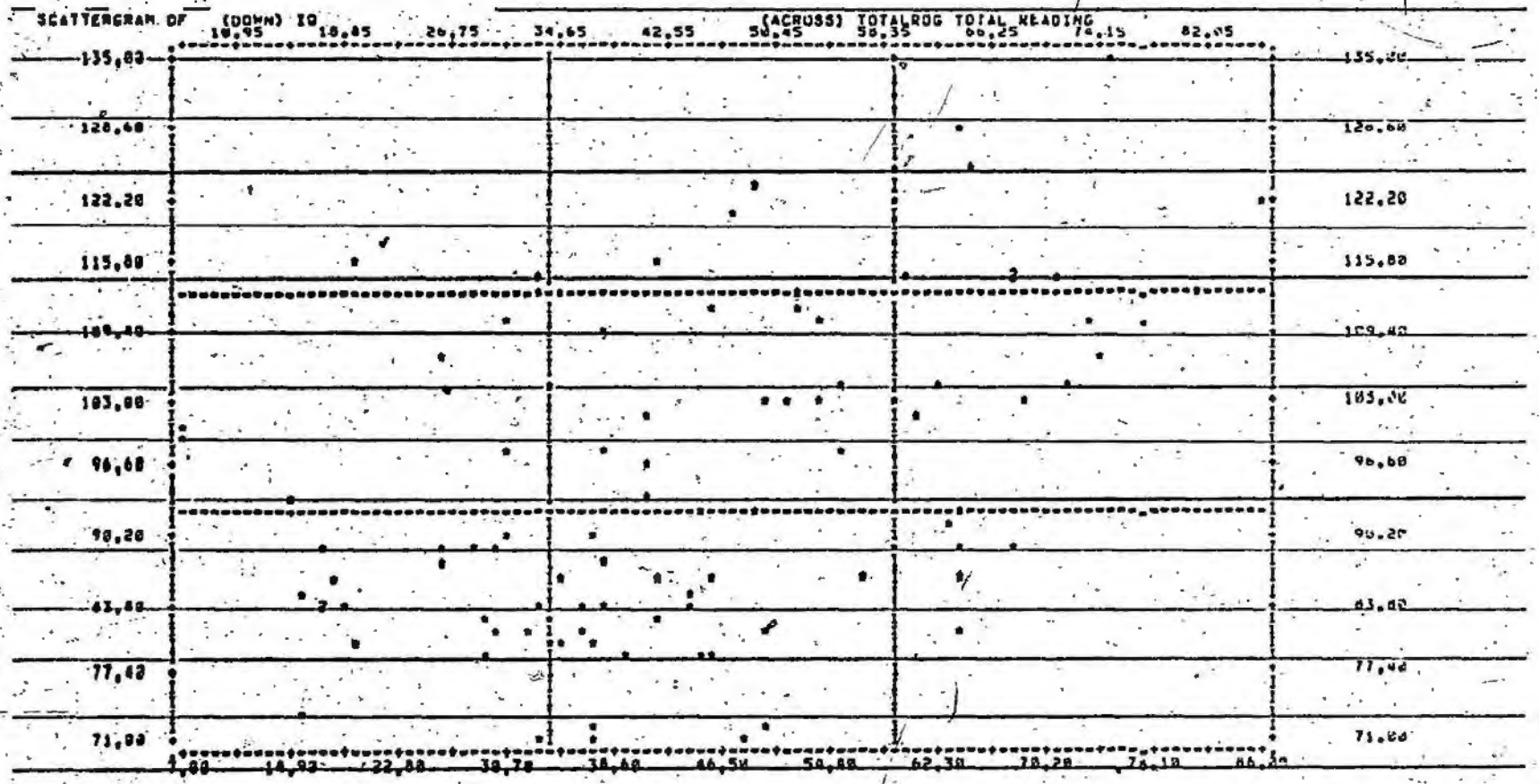

FIGURE 2. SCATTERGRAM OF RELATIONSHIP BETWEEN TOTAL READING AND INTELLIGENCE

Findings, Hypothesis 3a

The chi-square formula was used to determine whether a significant relationship exists between written composition ability and sex. A chi-square of 20.04 with 20 degrees of freedom and a significance level of .46 was found in this study, which means that there is no significant relationship between written composition ability and sex.

Discussion

As previously stated, a chi-square of 20.04 is not significant, thus hypothesis 3(a) is accepted. That is, there is no significant difference between male and female performance in written composition ability.

This finding refuted the work of other researchers in the area of written composition ability such as Ralph (1971) and Stoodt (1972). For example, Ralph found that girls performed better in spelling, capitalization, punctuation, usage, paragraph writing and total language than boys.

Findings, Hypothesis 3b

The Pearson product-moment correlation coefficient between written composition ability and socioeconomic status revealed a correlation coefficient of -.35, significant at the .001 level. On the basis of this finding, one may conclude that those students who were rated low on the Blishen Scale (socioeconomic status) were the same students

who scored high on written composition ability. Thus hypothesis 3(b) is rejected and the alternate hypothesis accepted. That is, there is a significant relationship between written composition ability and socioeconomic status. The relationship here is negative, however, and very difficult to explain. As pointed out under the findings of hypothesis 2(b), it is conceivable that the socioeconomic scale used was not discriminatory enough for the purposes of this study.

Findings, Hypothesis 3c

The Pearson product-moment correlation coefficient between intelligence and written composition ability revealed a correlation coefficient of .21, significant at the .05 level. On the basis of this finding, one may conclude that those students who achieved the highest scores on intelligence also scored the highest on written composition.

Discussion

As previously stated, a significant relationship exists between intelligence and written composition ability, and therefore hypothesis 3(c) is rejected. The alternate hypothesis being accepted is: There is a significant relationship between written composition ability and intelligence. A scattergram of this relationship is presented in Figure 3.

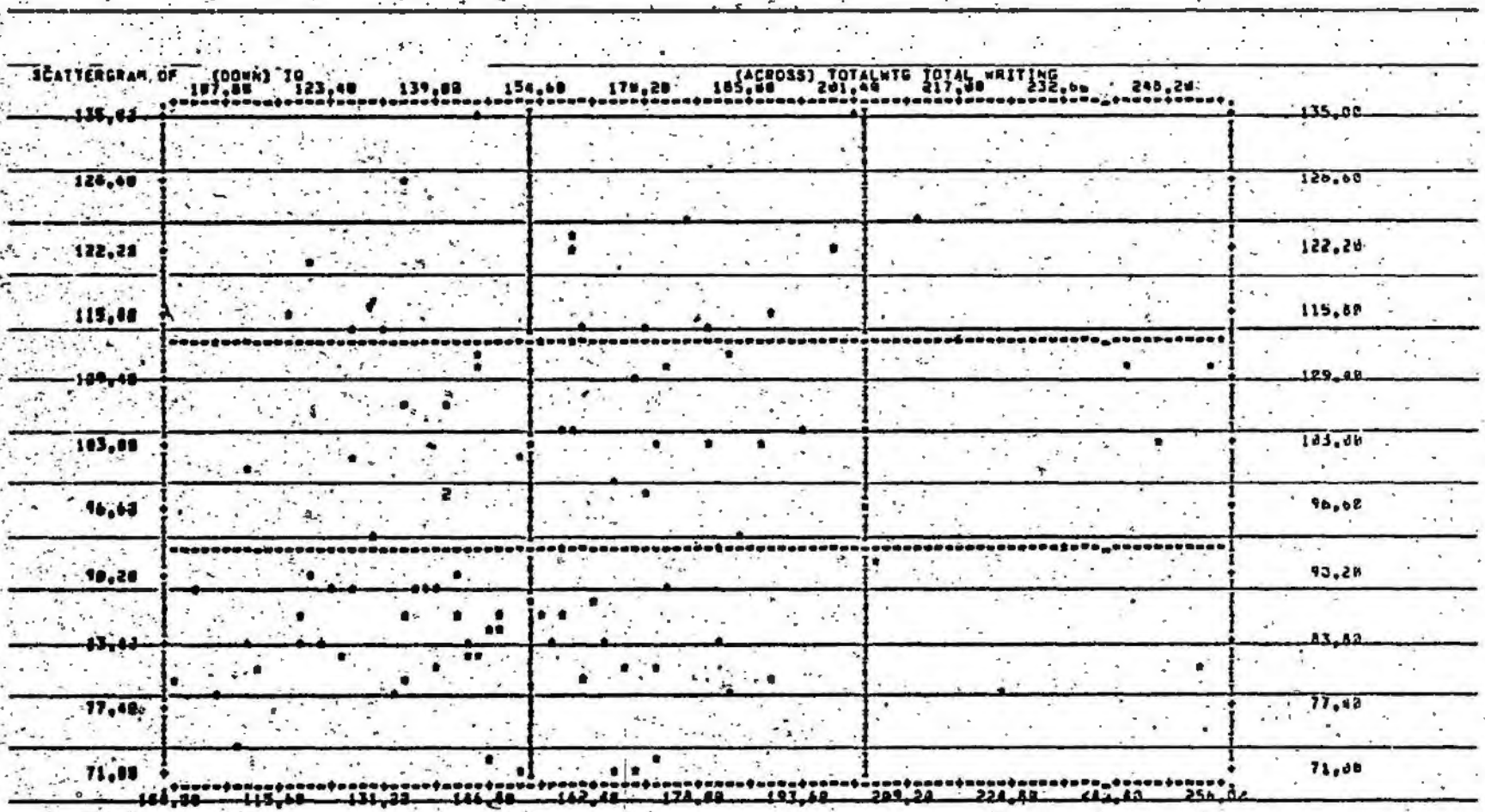

FIGURE 3. SCATTERGRAM OF RELATIONSHIP BETWEEN TOTAL WRITING AND INTELLIGENCE

CHAPTER V

SUMMARY, IMPLICATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

The purpose of this chapter is to present the main findings of the study, to suggest some practical implications for education that arise from the findings of this study, and to make recommendations for further research.

I. SUMMARY

The main findings of the investigation may be summarized as follows:

1. There is a significant relationship between reading ability and written composition ability.
2. All the subscores on reading correlated with the subscores on written composition ability to give a powerful indication of the relationship between reading and writing.
3. There is no significant relationship between sex and reading ability.
4. For the 100 students included in this investigation a negative relationship exists between socioeconomic status and reading ability.

5. There is a significant relationship between intelligence and reading ability.
6. There is no significant relationship between sex and written composition ability.
7. For the 100 students included in this investigation a negative relationship exists between socioeconomic status and written composition ability.
8. There is a significant relationship between intelligence and written composition ability.

Implications arising from these findings will be discussed in the next section.

II. PRACTICAL IMPLICATIONS

The results of this investigation clearly indicated that a strong positive relationship exists between reading ability and written composition ability. A correlation coefficient of .55, significant at the .001 level, was found between reading ability and written composition ability. To add further support to this relationship, the subscores of reading -- vocabulary, reading for information, reading for relationships, reading for interpretation, and reading for appreciation -- correlated positively with the six subscores of writing -- type-token ratio, self-expression, details, modification, figurative language and sentence complexity. Thus, the high positive correlations among these

measures reinforces the concept of a strong positive relationship between reading and writing. This finding indicates that with a knowledge of the writing ability score, one can make a prediction of a student's reading ability score. Before a child can comprehend the meaning of a printed text he must understand the language patterns which the printed symbols represent. Since reading is the process of interpreting the language meanings of printed symbols, one cannot interpret beyond the level of one's knowledge of language meanings. The findings of this study indicate that any increase in written language ability should be accompanied by an increase in reading ability. This evidence suggests that both reading and writing use certain language skills in common and that the presence of these skills should result in better performance in both reading and writing. Teachers should concentrate on teaching reading and writing conjointly rather than separately. Of the six language indices correlated with the reading subscores, sentence complexity consistently correlated the highest with all the reading subscores. Sentence complexity seems, then, to be the single most important predictor of success in reading. The implication here is that teachers should place more emphasis on having students practice the more complex sentence structures in writing. This should result in the increased recognition of these same structures in print. Thus, control of complex sentence structures in writing should benefit reading.

Correlation results from this study regarding the relationship between reading ability and intelligence, and between written composition ability and intelligence indicated that a strong positive relationship exists. The implication is that teachers when offering reading and writing instruction should take into consideration the intelligence of their students so that they may be accommodated through an adjustment of instruction.

To conclude, it seems obvious that teachers must be guided toward three main ends. First, teachers should be encouraged to consider reading as a vital component of overall language ability, not a subject isolated and complete in itself. Second, teachers should make use of the knowledge their students already have of the structure of their language and use this knowledge as the starting point in their reading instruction. This implies that the syntactic structure of the sentence should not be beyond the child's own level of performance. Third, reading and writing skills should be taught conjointly rather than separately.

III. RECOMMENDATIONS FOR FURTHER RESEARCH

The following recommendations for further research are attempts to overcome the limitations of the present study. The first recommendation is related to the data gathering limitation, namely, that the study dealt only with rural grade six students. A similar study dealing with urban and

rural students would make the findings more generalizable.

The second recommendation relates to the fact that this study was concerned with only one school district. If a larger study encompassing a number of districts were done using a different socioeconomic status scale, possibly the findings would be different from those of this study, that is, in the relationship of socioeconomic status to reading and writing ability.

The third recommendation is that several examples of students' written compositions be used in a similar study, instead of only one sample as used in this study.

The fourth recommendation is that, even though the present study was multivariate in nature, there are many other variables, such as school facilities, school attendance and size of family, which probably influence students' performance in reading and written composition ability and which should be studied.

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APPENDICES

APPENDIX A

READING TEST

PREVIOUSLY COPYRIGHTED MATERIAL

IN APPENDIX A, LEAF 95 AND 20 UNNUMBERED LEAVES,

NOT MICROFILMED.

New Developmental Reading Tests, Intermediate Level, Form A, by Bond/Balow/Hoyt.

APPENDIX B

WRITING ABILITY FORMULA

Writing Ability Formula

1. T.T.R. = $\frac{\quad}{44}$

2. Self-expression –
   - Emotions –
   - Senses –
   - Personal Responses – ___

   Total

3. Style
   - Details –
     - Time –
     - Place –
     - Names –
     - Title –
     - Actions – ___

     Total
   - Modifications –
     - Adjectives –
     - Adverbs –
     - Clauses (adj. & adv.) –
     - Phrases – ___

     Total
   - Figurative Language –
     - Simile –
     - Metaphor –
     - Metonymy –
     - Personification –
     - Hyperbole –
     - Irony –
     - Comparison – ___

     Total

4. Sentence Structure
   - Number of subordinations –
     - Interrogative –
     - Exclamatory –
     - Imperative –
   - Sentence Inversions – ___

   Total

APPENDIX C

SOCIOECONOMIC SCALE

TABLE 1

Occupations Ranked and Grouped According to Combined Standard Scores for Income and Years of Schooling, by Sex, Canada, 1951*

Occupation	Sex	Score**	Occupation	Sex	Score**
Class 1					
Judges	M	90.0	Chemists and metallurgists	M	65.8
Dentists	M	82.5	Officers, armed forces	M	65.1
Physicians and surgeons	M	81.2	Air pilots	M	65.0
Lawyers	M	78.8	Chemists and metallurgists	F	64.8
Engineers, chemical	M	77.8	Agricultural professionals	M	64.8
Actuaries	M	77.6	Electricity, gas & water officials	M	64.7
Engineers, mining	M	77.4	Other professions	M	64.0
Engineers, electrical	M	75.2	Construction managers	M	63.8
Engineers, civil	M	75.0	Wholesale trade managers	M	63.5
Architects	M	73.2	Librarians	F	63.4
			Authors, editors, & journalists	M	63.4
Class 2			Manufacturing managers	M	63.0
			Community service workers	M	62.4
Statisticians	F	72.9	Social welfare workers	F	62.2
Engineers, mechanical	M	72.6	Osteopaths and chiropractors	F	62.2
Professors	M	72.0	School teachers	M	62.2
Stock and bond brokers	M	70.9	Librarians	M	62.0
Veterinarians	M	69.8	Accountants and auditors	M	61.8
Business service officers	M	69.5	Authors, editors, and journalists	F	61.4
Statisticians	M	68.8	Clergymen	M	61.0
Mining managers	M	67.9	Designers, clothing	M	60.6
Finance managers	M	67.7	Gov't. service officials	M	60.6
Osteopaths and chiropractors	M	67.3	Transportation managers	M	60.1
Dietitians	F	67.0	Farmers	F	59.4
Professors	F	66.7	Community service workers	F	59.1

(cont'd.)

Table 1 (cont'd.)

Occupation	Sex	Score**
Dispatchers, train	M	58.5
Designers, cloth	F	58.2
Insurance agents	M	58.2
Foremen, communication	M	58.1
Advertising agents	M	58.0
Managers N.E.S.***	M	57.7
School teachers	F	57.6
Artists and teachers of art	M	57.6
Nurses, graduate	F	57.4
Real estate agents and dealers	M	57.0
Social welfare workers	M	57.0
Retail trade managers	M	57.0
Class 3		
Actors	F	56.9
Commercial travellers	M	56.7
Advertising agents	F	56.6
Forestry managers	M	56.5
Artists, commercial	F	56.4
Radio announcers	M	56.4
Laboratory technicians N.E.S.	F	56.0
Artists, commercial	M	56.0
Draughtsmen	M	56.0
Brokers, agents, and appraisers	M	56.0
Inspectors, communication	M	55.0
Artists and teachers of art	F	55.0
Surveyors	M	55.0
Recreation service officers	M	54.8
Purchasing agents	M	54.8
Agents, ticket station	M	54.3
Laboratory technicians N.E.S.	M	54.2
Stenographers and typists	F	54.1
Conductors, railway	M	54.1
Radio operators	M	54.0
Locomotive engineers	M	54.0
Photo-engravers	M	54.0
Music teachers	M	53.7
Teachers N.E.S.	F	53.6
Office appliance operators	F	53.4
Teachers N.E.S.	M	53.4
Retail trade managers	F	53.3
Telegraph operators	F	52.9
Foremen, mining	M	52.8
Window-decorators	F	52.3
Nurses, graduate	M	52.2
Actors	M	52.1
Stenographers	M	52.0
Class 4		
Book-keepers and cashiers	F	51.9
Forewomen, communication	F	51.8
Foremen, manufacturing	M	51.8
Photographers	M	51.8
Inspectors, construction	M	51.7
Window-decorators	M	51.6
Telegraph operators	M	51.6
Petroleum refiners	M	51.6
Toolmakers	M	51.6
Engravers, except photo-engravers	M	51.4
Undertakers	M	51.3
Office clerks	F	51.2
Locomotive firemen	M	51.2
Book-keepers and cashiers	M	51.2
Brakemen, railway	M	51.1

(cont'd.)

Table 1 (cont'd.)

Occupation	Sex	Score**
Power station operators	M	51.0
Office appliance operators	M	51.0
Doctor, dentist attendants	F	50.8
Motion picture projectionists	M	50.8
Radio repairmen	M	50.8
Captains, mates, pilots	M	50.7
Foremen, transportation	M	50.7
Foremen, commercial	M	50.6
Personal service officers	M	50.5
Class 5		
Patternmakers	M	50.4
Compositors	M	50.4
Inspectors, metal	M	50.4
Paper-makers	M	50.4
Photographers	F	50.2
Policemen	M	50.2
Office clerks	M	50.2
Mechanics, airplane	M	50.1
Inspectors, metal products	F	50.0
Music teachers	F	50.0
Firemen, fire department	M	49.8
Pressmen and plate printers	M	49.8
Telephone operators	F	49.6
Electricians	M	49.6
Machinists, metal	M	49.6
Linemen and servicemen	M	49.4
Engineering officers (on ships)	M	49.4
Baggagemen	M	49.4
Transportation inspectors	M	49.4
Rolling millmen	M	49.4
Auctioneers	M	49.3
Inspectors and graders	M	49.2
Farmers	M	49.2
Photographic occupations N.E.S.	M	49.2
Collectors	M	49.1
Dental mechanics	M	49.1
Sulphite cookers	M	49.0
Wire drawers	M	49.9
Other ranks, armed forces	M	46.8
Electroplaters	M	46.8
Plumbers	M	46.8
Motormen	M	46.7
Quarriers	M	46.6
Machine operators, metal	M	46.5
Paint makers	M	46.4
Filers	M	46.4
Upholsterers	M	46.3
Knitters	M	46.3
Wood inspectors	M	46.3
Barbers	F	46.2
Milliners	F	46.2
Tobacco products workers	F	46.2
Furnacemen	M	46.2
Furriers	M	46.2
Brothers	M	46.1
Paper box makers	M	46.1
Other bookbinding workers N.E.S.	F	46.0
Coremakers	M	46.0
Vulcanizers	M	46.0
Liquor and beverage workers	M	46.0
Postmen	M	45.9
Meat canners	F	45.9
Other upholstering workers N.E.S.	F	45.8
Bookbinders	F	45.8
Transportation, storage, comm. workers	F	45.8
	M	45.6

(cont'd.)

Table 1 (cont'd.)

Occupation	Sex	Score**
Furriers	F	45.6
Structural iron workers	M	45.6
Mechanics, motor	M	45.6
Textile inspectors	M	45.6
Cabinet and furniture makers	M	45.5
Loom fixers	M	45.5
Weavers, textile	F	45.4
Butchers	M	45.4
Miners	M	45.4
Assemblers, electrical equipment	F	48.9
Operators, electric street railway	M	48.8
Stationary engineers	M	48.7
Bookbinders	M	48.6
Tire and tube builders	F	48.4
Canvassers	M	48.2
Telephone operators	M	48.2
Switchmen and signalmen	M	48.2
Opticians	M	48.2
Jewellers and watchmakers	M	48.2
Personal service workers	F	48.1
Assemblers, electrical equipment	M	48.1
Tire and tube builders	M	48.1
Millwrights	M	48.0
Religious workers N.E.S.	M	48.0
Fitters, metal	F	47.9
Milliners	M	47.8
Construction foremen	M	47.7
Opticians	F	47.6
Bus drivers	M	47.6
Heat treaters	M	47.6
Religious workers N.E.S.	F	47.5
Photographic workers N.E.S.	F	47.4
Machine operators, metal	F	47.4
Boilermakers	M	47.3
Jewellers and watchmakers	F	47.2
Other bookbinding workers N.E.S.	M	47.2
Sales clerks	M	47.2
	M	47.2
Welders	M	47.2
Mechanics N.E.S.	M	47.2
Mechanics, railroad	M	47.2
Fitters, metal	M	47.2
Cutters, textile goods	M	47.2
Millmen	M	47.2
Wire drawers	F	47.1
Core makers	F	47.1
Riggers	M	47.1
Sheetmetal workers	M	47.1
Shipping clerks	M	47.0
Logging foremen	M	45.4
Labellers	M	45.3
Nurses, in training	F	45.2
Meat canners	M	45.2
Farm managers	M	45.2
Plasterers	M	45.2
Textile inspectors	M	45.1
Other pulp and paper workers	F	45.1
Class 6		
Winders and warpers	F	45.0
Carders and drawing frame workers	F	45.0
Sales clerks	F	45.0
Moulders, metal	M	45.0
Nurses, practical	M	45.0
Cutters, textile goods	F	44.9
Elevator tenders	F	44.8
Tailoresses	F	44.8

(cont'd.)

Table 1 (cont'd.)

Occupation	Sex	Score**	Occupation	Sex	Score**
Textile inspectors	F	44.8	Tanners	M	43.6
Potmen	M	44.8	Hat and cap makers	F	43.5
Timbermen	M	44.7	Cutters, leather	M	43.5
Prospectors	M	44.7	Commercial packers and wrappers	F	43.4
Oilers, power plant	M	44.7	Teamsters	M	43.4
Liquor and beverage workers	F	44.6	Stone cutters	M	43.4
Paper box makers	F	44.6	Riveters and rivet heaters	M	43.4
Kiln burners	M	44.6	Butter and cheese makers	M	43.3
Brick and stone masons	M	44.6	Chauffeur	M	43.3
Construction machine operators	M	44.5	Boiler firemen	M	43.3
Canvassers	F	44.4	Spinners	M	43.3
Service station attendants	M	44.4	Inspectors N.E.S., graders	F	43.2
Painters and decorators	M	44.4	Postmen	F	43.2
Hat and cap makers	M	44.4	Waiters	M	43.2
Bleachers and dyers	M	44.4	Carpenters	M	43.2
Spinners and twisters	F	44.3	Sewers and sewing machine operators	M	43.2
Rubber shoe makers	F	44.2	Forest rangers	M	43.2
Porters	M	44.2	Lock keepers, canalmen	M	43.1
Tobacco products workers	M	44.2	Wood turners	M	43.1
Millers	M	44.2	Labourers, mines and quarries	M	43.1
Nurses, practical	F	44.1	Sewers and sewing machine operators	F	43.0
Finishers, textile	F	44.0	Brick and stone masons	M	43.0
Blacksmiths	M	44.0	Textile inspectors	F	42.8
Tailors	M	44.0	Machine operators, boot and shoe	F	42.8
Bakers	M	43.8	Knitters	F	42.8
Weavers	M	43.8	Guards	M	42.8
Rubber shoe makers	M	43.8	Winders, warpers, reelers	M	42.8
Labellers	F	43.7	Glove makers	M	42.7
Other personal service workers	F	43.6	Cutters, leather	F	42.6
Barbers	M	43.6	Elevator tenders	M	42.5
Truck drivers	M	43.6	Bakers	F	42.4
Packers and wrappers	M	43.6	Machine operators, boot and shoe	M	42.4
Finishers, wood	M	43.6	Launderers	M	42.4
Finishers, textile	M	43.6	Firemen, on ships	M	42.4

(cont'd.)

Table 1 (cont'd.)

Occupation	Sex	Score**
Cement and concrete finishers	M	42.4
Dressmakers and seamstresses	F	42.3
Carders and drawing frame tenders	M	42.3
Box and basket makers	F	42.2
Coopers	M	42.2
Sailors	M	42.1
Harness and saddle makers	M	42.0
Nuns	F	41.8
Cooks	M	41.8
Janitors	M	41.6
Laundresses, cleaners, and dyers	F	41.4
Sectionmen and trackmen	M	41.4
Charworkers and cleaners	M	41.3
Paper box, bag, and envelope makers	M	41.3
Sawyers	M	41.2
Longshoremen	M	41.2
Waitresses	F	41.2
Glove makers	F	41.2
Labourers	M	40.8
Cooks	F	40.5
Messengers	M	40.2
Shoemakers	M	40.2
Ushers	M	40.1
Janitors	F	40.0
Hawkers	M	39.3
Housekeepers and matrons	F	38.9
Hotel cafe and household workers	M	38.8
Newsboys	M	38.7
Guides	M	37.8
Hotel cafe and household workers	F	37.8
Farm Labourers	M	37.5
Lumbermen	M	37.4
Charworkers and cleaners	F	37.4
Fishermen	M	36.9
Bootblacks	M	36.8
Fish canners, curers and packers	M	36.2
Fish canners, curers and packers	F	36.0
Hunters and trappers	M	32.0

*Canada, Dominion Bureau of Statistics, Census of Canada, 1951, V, Table 21, and IV, Table 11 (Ottawa, 1953); Canada, Dept. of Internal Revenue. Taxation Statistics, 1951 (Ottawa, 1953). Additional information supplied by D.B.S., Census Analysis Section.

**The mean of the scores = 50; the standard deviation = 10 (calculated separately for each sex).

***

TABLE 2

Percentage Distribution of Labour Force,* Occupational Classes, Selected Origins, Canada, 1951

Occupational Class	ORIGIN												
	Total	British	French	German**	Italian	Scandinavian	Russian	Ukrainian	Polish	Other European	Jewish	Native Indian and Eskimo	Asiatic
(a) Percentage Distribution of Occupational Classes, by Origin													
Class 1	100.0	66.3	18.7	2.3	0.6	1.4	0.6	1.1	1.0	3.1	4.4	—	0.5
Class 2	100.0	54.0	26.2	4.1	1.0	2.0	0.7	1.8	1.1	3.7	4.7	—	0.7
Class 3	100.0	64.5	19.4	3.2	1.1	1.8	0.5	2.0	1.2	3.5	2.3	—	0.5
Class 4	100.0	59.6	22.8	3.5	1.3	1.7	0.5	2.1	1.3	4.1	1.9	—	1.2
Class 5	100.0	51.8	26.5	5.4	1.1	2.6	0.7	3.7	2.0	5.1	0.7	0.1	0.3
Class 6	100.0	42.2	36.8	4.2	2.0	1.9	0.7	2.9	2.1	4.8	1.4	0.2	0.8
Class 7	100.0	38.7	35.0	5.3	1.7	2.4	0.9	4.4	2.6	6.8	0.3	0.8	1.1
TOTAL	100.0	49.0	29.5	4.7	1.4	2.2	0.7	3.2	1.9	5.1	1.4	0.2	0.7
(b) Percentage Distribution of Origins, by Occupational Class													
Class 1	0.9	1.3	0.6	0.5	0.4	0.6	0.9	0.3	0.5	0.6	2.9	—	0.7
Class 2	10.7	11.8	9.5	9.3	7.8	9.6	9.8	6.1	6.2	7.8	35.7	1.3	10.8
Class 3	6.3	8.3	4.1	4.3	5.1	5.2	4.7	3.9	4.0	4.3	10.1	0.9	4.5
Class 4	7.0	8.5	5.4	5.2	6.4	5.3	4.9	4.6	4.7	5.8	9.5	1.2	12.1
Class 5	34.2	36.2	30.6	39.4	26.4	39.3	33.7	38.7	35.3	34.3	18.0	12.0	15.2
Class 6	19.6	17.0	24.5	17.3	28.2	16.9	18.4	17.5	21.0	18.7	20.0	12.8	23.0
Class 7	21.3	16.9	25.3	24.0	25.7	23.1	27.6	28.9	28.3	28.5	3.8	71.8	33.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*D.B.S. Census of Canada, 1951, IV, Table 12.

**Austrian included with "Other European."

APPENDIX D

INTELLIGENCE TEST

PREVIOUSLY COPYRIGHTED MATERIAL,

IN APPENDIX D, LEAVES 107, 108 AND 19 UNNUMBERED LEAVES,

NOT MICROFILMED.

Canadian Lorge-Thorndike Intelligence Tests, Levels A-F, Form 1. Nelson's of Canada. ISBN 0-176-09701-5.

APPENDIX E

QUESTION TYPES

Illustration of Question Types (Bormuth et al. 1970:352)

Type	Sentences
Sentence Comprehension Questions	
Original Sentence	The boy rode the steed.
Rote	Who rode the steed?
Transform	By whom was the steed ridden?
Semantic Substitute	Who rode the horse?
Compound	By whom was the horse ridden?
Anaphora Comprehension Questions	
Original Sentences	The boy fell off the steed. He fractured his arm.
Rote	Who fractured his arm?
Transform	Who was it who fractured his arm?
Semantic Substitute	Who broke his arm?
Compound	Who was it who broke his arm?
Intersentence Syntax Questions	
Original Sentences	The boy fell off the steed. He fractured his arm.
Rote	What caused the fracturing of the boy's arm?
Reversal	What did the boy's fall from the steed cause?
Semantic Substitute	What caused the breaking of the boy's arm?
Compound	What was the breaking of the boy's arm caused by?

APPENDIX F

SYNTACTIC FORMULA

Formula for Syntactic Complexity
(Evanechko et al., 1974:317)

1. 0 Count Structures
   - A. Sentence Patterns (A)
     1. S-V. (adverbial)
     2. S-V.O
     3. S-be - Complement
     4. S-V - Infinitive
   - B. Simple Transformations
     1. Interrogative
     2. Exclamatory
     3. Imperative
   - C. Coordinate Clauses joined by "and"
   - D. Non-Sentence Expressions

1 Count Structures

4. A. Sentence Patterns (B)
   1. S-V.IO-O
   2. S-V.O - Complement
   - B. Noun Modifiers
     1. Adjectives
     2. Possessives
5.   3. Predeterminers
     4. Participles
     5. Prepositional Phrases
   - C. Other Modifiers
     1. Adverbials
     2. Modals
6.   3. Negatives
     4. Set Expressions
     5. Gerunds
     6. Infinitives
   - D. Coordinates
7.   1. Coordinate Clause
     2. Deletion of Coordinate Clause
     3. Paired Coordinate

2 Count Structures

- A. Passives
- B. Paired Conjunctions
- C. Dependent Clauses
8. D. Comparatives
- E. Participles
- F. Infinitives as Subjects
- G. Appositiveness
- H. Conjunctive Adverbs

3 Count Structures

- A. Clauses used as Subjects
- B. Absolutes

9. Total Value
10. Average Value
11. Communication Units*
12. Total Words
13. Average Words per C.U.

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*"A group of words which cannot be further divided without loss of their essential meaning."

APPENDIX G

TESTING SCHEDULE

Testing Schedule

Monday, May 17	Holyrood (a.m.) Harbour Main (p.m.)	
Tuesday, May 18	Avondale (a.m.) Conception Hr. (p.m.)	Intelligence Testing
Wednesday, May 19	Colliers (a.m.) Chapel Arm (p.m.)	

Reading Testing -- Writing Samples

Thursday, May 20	Holyrood (a.m.) Reading Test (p.m.) Writing Sample
Friday, May 21	Harbour Main (a.m.) Reading Test (p.m.) Writing Sample
Wednesday, May 26	Avondale (a.m.) Reading Test (p.m.) Writing Sample
Thursday, May 27	Conception Hr. (a.m.) Reading Test (p.m.) Writing Sample
Friday, May 28	Colliers (a.m.) Reading Test (p.m.) Writing Sample
Monday, May 31	Chapel Arm (a.m.) Reading Test (p.m.) Writing Sample