GROWTH PATTERNS IN READING ACHIEVEMENT

by

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THE UNIVERSITY OF BRITISH COLUMBIA
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Department of Education

The University of British Columbia
Vancouver 8, Canada

Date August 15, 1969
The Problem

The purposes of this study were (1) to investigate and analyze patterns of growth in reading achievement from grade three through grade seven of children with different initial status of reading readiness and (2) to find out what early childhood characteristics distinguished those who have become good and poor readers in grade five.

Methods and Procedures

The first investigation was a retrospective, longitudinal study of the patterns of the means in Word Meaning and Paragraph Meaning of the Stanford Achievement Test. The subjects were 300 seventh graders who had available scores on the Metropolitan Readiness Tests in grade one and on the Stanford Achievement Test in grades three through seven. These pupils were randomly selected from a population of 517 children from 14 elementary schools. Analysis of variance, t tests and graphs were employed in comparing the growth patterns exhibited by pupils in the superior, high normal, average, low normal, and poor risk categories of reading readiness.
The second part was an ex post facto study in which the Fisher exact probability test was used in identifying certain preschool and beginning school characteristics that differentiated the good from the poor grade five readers. Case studies were made on sixteen good readers and sixteen poor readers randomly selected from the top 27 per cent and the bottom 27 per cent of a population of 315 grade five pupils from five elementary schools. Information was obtained from the scores on the Metropolitan Readiness Tests, permanent school records, and interviews with parents.

Conclusions

1. The three highest groups of readiness categories, the superior, high normal, and average maintained their relative positions throughout the entire five-year period. This trend indicated that pupils with high initial status of reading readiness continue to perform well in reading throughout the elementary grades.

2. Those in the superior group remained superior, on the average, and even tended to progress at a faster rate than those in the other categories of reading readiness.

3. The slopes of the curves on Paragraph Meaning of the average and the low normal groups and on Word Meaning of the low normal and the poor risk groups tended to be similar.
4. There appeared to be no plateau in grade four in the growth curves of all levels of reading readiness but something like a plateau was noted from grades five to six.

5. There was a steep rise in growth in reading in grade seven for all the five categories of reading readiness.

6. The mean gains from grade three through grade seven were significantly different for all the reading readiness groups.

7. In general, the boys surpassed the girls at all grade levels. The differences, however, were found to be significant in most grades only for the high normal category on Paragraph Meaning and for the high normal and low normal categories on Word Meaning.

8. The characteristics in preschool and early school years that were found to differentiate between the good and the poor readers in the fifth grade were (a) reading readiness category, (b) eagerness to do things by himself, (c) curiosity, (d) interest in reading, (e) congenial relationship with parents, (f) self-confidence, (g) was read to and
given help in reading, (h) visual perception, (i) auditory perception, (j) richness of verbal concepts, (k) vocabulary, and (l) number knowledge.
ACKNOWLEDGMENT

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CHAPTER I

THE PROBLEM

This chapter presents an introduction to the study and gives information regarding the (1) importance of the study, (2) statement of the problem, (3) hypotheses, (4) definition of terms, and (5) limitations of the study.

I. INTRODUCTION

The importance of readiness in the total reading development of each child has long been recognized. Since the early study conducted by Deputy\(^1\) in 1930, the concept of reading readiness has gained wide acceptance among reading experts, researchers, teachers, and administrators. Conant claimed that "since reading and the learning of reading are complex, it should be clear that insuring readiness to read is an important factor in the reading instruction program."\(^2\) It has been said, too, that "the progress young children make when they enter school in the primary grades depends to a large extent upon their readiness for learning

\(^{1}\)Erby C. Deputy, Predicting First-Grade Reading Achievement: A Study of Reading Readiness (Contributions to Education No. 425. New York: Bureau of Publications, Teachers College, Columbia University, 1936).

and upon the provisions the school makes for variations in readiness."\(^3\) This being the case, Bond and Wagner believed that "an understanding of readiness on the part of the teacher will do much to facilitate the child's reading growth. . . . Readiness will be an ever-present concern of all teachers in every learning situation."\(^4\)

Gates stated that "reading readiness implies that a child will be successful and interested in learning to read if reading is introduced when he is 'ripe' for it and that he is likely to fail and to be annoyed when instruction is begun before that time."\(^5\) Further, Ilg and Ames surmised that "possibly the greatest contribution which can be made toward guaranteeing that each individual child will get the most possible out of his school experience is to make certain that he starts that school experience at what is for him the right time. This should be the time when he is truly ready and not merely some time arbitrarily decided upon by custom or by law."\(^6\)

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Numerous studies aimed at identifying the readiness factors which are related to success in beginning reading have been made. While most of these investigations have attested to the relevance of reading readiness for the initial stage in reading, there seems to be some disagreement as to what readiness factors best predict reading success. Harrison argued that "since reading is an intellectual process, factors of intellectual development fostering reading readiness are of greater importance than any group of factors."\(^7\)

Morphett and Washburne\(^8\) concluded that a mental age of six is necessary for a child to succeed in reading and that a mental age of six and a half more nearly insures success. However, research findings by Davidson,\(^9\) Wilson,\(^10\) and Durkin\(^11\) indicated that some children with mental ages below six also make progress in reading. Gates contended


that "the crucial mental age level will vary with the materials; the type of teaching; the skill of the teacher; the size of the class; the amount of preceding preparatory work; the thoroughness of examination; the frequency and the treatment of special difficulties, such as visual defects of the pupil; and other factors."\textsuperscript{12}

II. IMPORTANCE OF THE STUDY

The relationship of the intellectual, physical, social and emotional factors of reading readiness to reading achievement has continued to be the topic of investigations among educators and researchers. A perusal of the related literature has revealed that most of these studies have used first-grade children as their subjects. However, Gray\textsuperscript{13} maintained that studies of beginning reading must be regarded as inconclusive since learning to read is still very incomplete at the beginning stages.

The paucity of research on the relationship of the factors associated with readiness for learning to read to achievement in reading at the higher grade levels has made


\textsuperscript{13}William S. Gray, The Teaching of Reading and Writing (London: UNESCO and Evans Bros., 1956), p. 44.
it necessary that further studies be conducted in this area. A knowledge of the early childhood physical, intellectual, and emotional characteristics highly related to success in reading in intermediate grades could be useful to parents and to teachers of kindergarten and first grade. Since the foundation for reading is laid in preschool and beginning school years, parents and teachers could cooperate in providing the early experiences that would help children grow into reading.

Many studies on patterns of reading growth have been based only on cross sections of the population and these do not necessarily represent the patterns for a particular group or individual since children grow at different rates and reach similar developmental stages at different ages. Most of the longitudinal investigations on reading growth have been conducted in laboratories or clinics on small groups or special cases. A few longitudinal studies on large unselected groups have used either chronological age or levels of intelligence as base line. There remains a need to identify patterns of reading growth exhibited by youngsters in various categories of reading readiness. An awareness of these patterns would give teachers and administrators information that could be useful in planning and carrying out reading readiness programs in schools. If slowness in reading could be detected early in the children's
development greater focus on preventive and remedial measures could be placed during the earlier school years in order to minimize failures in reading in later years.

III. STATEMENT OF THE PROBLEM

This study was designed to investigate and analyze the patterns of growth in reading achievement that have taken place from grade three to grade seven among a group of children belonging to the superior, high normal, average, below normal, and poor risk categories of readiness at the beginning of first grade. Another purpose of this investigation was to identify physical, intellectual, social and emotional characteristics while in preschool, kindergarten and first grade of good and poor readers in intermediate grades. It attempted to answer the following questions:

1. What is the nature of growth in reading achievement of children in each of five categories of reading readiness?

   1.1. Are the patterns of group means of reading achievement different from one category to another?

   1.2. Is there a plateau in grade four which indicates lack of growth in the reading growth curve for each category of reading readiness?
1.3. Is the mean gain in reading achievement from grade three to grade seven different for each of five categories of reading readiness?

1.4. Are the reading growth patterns among boys different from those among girls?

2. What physical, intellectual, social and emotional characteristics of children before and in grade one distinguish those who have become good and poor readers in intermediate grades?

IV. HYPOTHESES

The following hypotheses were tested in this study:

1. There is no difference among the patterns of group means in reading achievement of pupils belonging to each of the superior, high normal, average, low normal, and poor risk categories of reading readiness.

2. There is a plateau in grade four in the reading growth curve for each category of reading readiness.

3. There are significant differences in the mean gains from grade three to grade seven among the groups in five categories of reading readiness.
4. There are sex differences in the reading growth patterns of the five categories of reading readiness.

5. There are some outstanding early childhood physical, intellectual, social, and emotional characteristics that distinguish those who have become good and poor readers in grade five.

V. DEFINITION OF TERMS

1. Patterns of reading growth - the profile of means in reading achievement from grade three to grade seven as assessed by the Stanford Achievement Tests given at the end of each school year.

2. Reading readiness - the timeliness of what we wish to teach in the light of the child's ability to profit from it not only at the beginning stages of learning to read but at every step in the child's progress from simple reading tasks to those that are more complicated.14

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3. Readiness category - a classification in reading readiness as measured by the Metropolitan Readiness Tests.

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<thead>
<tr>
<th>Category</th>
<th>Score</th>
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<tr>
<td>Superior</td>
<td>90 - 100</td>
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<tr>
<td>High Normal</td>
<td>80 - 89</td>
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<tr>
<td>Average</td>
<td>65 - 79</td>
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<tr>
<td>Low Normal</td>
<td>40 - 64</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>0 - 39</td>
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4. Reading achievement - the gain from one year to another in Paragraph Meaning and Word Meaning expressed in K-scores as measured by the Stanford Achievement Tests given at the end of each grade.

5. K-scores - standard scores derived from Gardner's K-scale which is claimed to have approximately equal units throughout the entire range of the scale.

6. Significant difference - any difference found to be significant at the five percent level.
VI. LIMITATIONS OF THE STUDY

Since this was a retrospective longitudinal study, the investigator had to depend only on measures that exist. The findings of this study were confined mostly to the skills and abilities measured by the Metropolitan Readiness Tests.
CHAPTER II

REVIEW OF RELATED LITERATURE

The acceptance of the concept of readiness as an integral part of the growth of each child has resulted in a large number of studies which have attempted to identify the readiness factors related to success in reading. Research on reading readiness and reading achievement growth related to this study are discussed in this chapter. These investigations have been classified into four categories: (1) predictive studies involving first grade pupils; (2) reading readiness and success in reading in higher grade levels; (3) sex differences in reading readiness and reading achievement; and (4) longitudinal studies on reading achievement growth.

I. PREDICTIVE STUDIES INVOLVING PUPILS IN GRADE ONE

Dean\(^1\) administered the Metropolitan Readiness Tests and the Monroe Reading Aptitude Tests for Prediction and Analysis of Reading Abilities to pupils of five first grade rooms during the first week of the school term to determine to what extent these tests can predict reading achievement. Using the Metropolitan Achievement Test as criterion, he

\(^1\)Charles Dean, "Predicting First Grade Reading Achievement," The Elementary School Journal, 39:609-16, April, 1939.
found that the scores on the Metropolitan Readiness Tests correlated .59 with reading achievement and the scores on the Monroe Reading Aptitude Tests correlated .41 with reading achievement. The relation of mental age as assessed by the Stanford Revision of the Binet-Simon Intelligence Scale to reading achievement was relatively high, the correlation being .62. Mental age, therefore, was found to be a better predictor of the reading achievement of first grade pupils than readiness tests.

In an attempt to prove that homogeneous grouping with respect to ability and readiness would make for effective teaching, Roslow\(^2\) used the Kuhlmann-Anderson Intelligence Tests and the Monroe Reading Aptitude Tests in placing first grade children in three sections. Children with mental ages above 6, IQ above 110, and reading aptitude percentiles above 60 were assigned to Section 1. Pupils with mental ages from 5.6 to 6.0, IQ from 95 to 110, and reading aptitude percentiles from 40 to 60 were placed in Section 2. Those with mental ages below 5.6, IQ below 95, and reading aptitude percentiles below 40 were in Section 3. All these children had been given a program of reading readiness.

\(^2\)Sydney Roslow, "Reading Readiness and Reading Achievement in First Grade," *Journal of Experimental Education*, 9:154-59, December, 1940.
activities while in kindergarten. Since the purpose of this placement was to minimize failure in reading, out-of-classroom tutoring had been given to children with reading difficulties while in the first grade.

At the end of grade one, reading achievement was measured by the Gates Primary Reading Tests and the principal's ratings of their oral reading. The principal evaluated the oral reading of each child in terms of A,B,C,D, and F.

The reading achievement of the children as a whole was found to be above the norm for the end of first grade. The results of this study supported the belief that children with mental age below 6, with IQ below 100, and with an aptitude percentile below 50 can successfully be taught to read in first grade under a program including differential placement, reading readiness activities in kindergarten, and remedial and preventive instruction in addition to regular classroom teaching.

Henig\(^3\) determined the forecasting value of the Lee-Clark Reading Readiness Test and of the teachers' estimates of pupils' progress. Using the teachers' marks at the end of the first grade as criterion, he found contingency co-

coefficients of .60 and .55 respectively. This showed that a substantial degree of relationship exists between reading readiness test results and reading achievement. The predictive value of the teachers' judgement was just as high.

In an investigation of the predictive validity of the Metropolitan Readiness Tests, Mitchell tested 1170 pupils in white and negro schools in September. The Metropolitan Achievement Tests, Primary I Battery were administered the following May.

The correlations between the readiness scores and the achievement scores for all subtests and the total tests were computed. Correlations between the subtests of the Metropolitan Readiness Tests and the Metropolitan Achievement Tests ranged from .51 to .63. Mitchell concluded that the readiness tests were good predictors of first grade learning. She found the girls in her sample to be more ready for formal reading instruction than the boys. The mean for the boys in the Metropolitan Readiness Tests was 73.92 while that of the girls was 76.42. The difference of 2.5 was significant at the five per cent level.

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Dykstra\(^5\) studied the relationship between selected measures of auditory discrimination at the beginning of first grade and reading achievement at the end of first grade.

Each of the 331 boys and 301 girls randomly selected from eight schools was given the Lorge-Thorndike Intelligence Test and seven different auditory discrimination tests in the first four weeks of school. These tests of auditory discrimination were selected from the Murphy-Durrell Diagnostic Reading Readiness Test, the Gates Reading Readiness Test, the Harrison-Stroud Reading Readiness Profiles, and the Reading Aptitude Tests. The following spring, reading achievement was measured by the word recognition and paragraph meaning subtests of the Gates Primary Reading Test.

He found the correlation coefficients between the measures of auditory discrimination and reading achievement to be relatively low (from .19 to .46). He inferred from this study that skill in auditory discrimination is not sufficient to guarantee success in learning to read.

A comparison of the judgment of kindergarten teachers with the results of four standardized tests for predicting

kindergarteners' success in first grade was done by Mattick.\textsuperscript{6} Nine hundred seventy-two kindergarten children were randomly selected from a population of 14,000 as subjects of the study.

All the kindergarten teachers in the school district were asked to rate each child in the classes as having high, average, or low potential for success in grade one. These teachers' marks were completed before the standardized tests were administered.

During late April and May, each pupil took any two of the following: \textit{Lee-Clark Reading Readiness Test}, \textit{Metropolitan Readiness Tests}, Form R, \textit{Lorge-Thorndike Intelligence Tests}, Form A, and the \textit{California Short-Form Test of Mental Maturity}.

In October of the following school year, all first grade teachers made a preliminary rating of their pupils' achievement as high, average, or low. Correlation coefficients were computed between the kindergarten teachers' ratings and the pupils' scores on the foregoing tests and between the first-grade teachers' ratings and the pupils' scores on these same standardized tests. The coefficients of correlation ranged from .546 to .368. The correlation between the \textit{Metropolitan Readiness Tests}, Form R, and first-

grade teachers' ratings was found to be the highest. Mattick concluded from this study that of the five predictors of first grade success, the Metropolitan Readiness Tests were the most effective.

Barrett investigated the ability of seven visual discrimination tasks to predict first grade reading achievement. The subjects of the study were 331 boys and 301 girls. The total sample had a mean reading score of grade 2.3 and a mean IQ of 102.

The tests used were: 1) Gates Picture Directions Tests, 2) Gates Word Matching Test, 3) Gates Word-Card Matching Test, 4) Gates Reading Letters and Numbers Test, 5) Pattern Copying Test, 6) Picture Square Test, and 7) Reversals Test. The Gates Primary Word Recognition Test and the Gates Primary Paragraph Reading Test were used to assess the end-of-first grade reading achievement.

A multiple regression analysis showed that Reading Letters and Numbers was the best single predictor of reading achievement in grade one. The optimum combination for predicting first-grade reading achievement were Reading Letters and Numbers, Pattern Copying, and Word Matching.

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7 Thomas C. Barrett, "Visual Discrimination Tasks as Predictors of First Grade Reading Achievement," The Reading Teacher, 18:257-61, January, 1965.
Thackray\textsuperscript{8} used multiple correlations in assessing the predictive value of various aspects of reading readiness: visual and auditory discrimination, mental ability, home environment, and emotional and personal attitudes. He administered to a representative sample of 182 children from eleven schools the following measures: Harrison-Stroud Readiness Profiles, the Kelvin Measurement of Ability Test for Infants, and a multiple-choice Picture Vocabulary Test which he constructed. He also collected the teachers' ratings of general ability, teachers' ratings of language and speech, and made notes on the socio-economic background of the children's homes. The emotional and personal attitudes of the subjects were based on the teachers' ratings of self-confidence, cooperation with adults, cooperation with other children, persistence, stability and prevailing attitude. Using the Southgate Group Reading Test as criterion, he found the auditory and visual discrimination sub-tests of the Harrison-Stroud Reading Readiness Profiles to correlate highly with reading achievement, the correlation coefficients being .53 and .50 respectively. In this particular sample, the Harrison-Stroud Reading Readiness Profiles proved a valid measure of reading readiness (.59).

\textsuperscript{8}D.V. Thackray, "The Relationship Between Reading Readiness and Reading Progress," \textit{British Journal of Educational Psychology}, 35:252-54, June, 1965.
In the analysis of data received by the Minnesota Coordinating Center from twenty seven first grade reading projects, Bond and Dykstra reported that the best single predictor of first grade reading success was the Murphy-Durrell Letter Names Test. This test had coefficient of correlations between .52 and .60 with both the Stanford Word Recognition and the Stanford Paragraph Meaning subtests for each of the six treatments used in the investigation (basal, i.t.a., phonics, language experience, linguistic treatment, and basal and phonics). They found out that the predictive validity of a single subtest such as the Letter Names subtest is about the same as that of the whole reading readiness battery. They concluded that it probably was not necessary to give the entire readiness test if the only purpose was to predict reading achievement.

II. READING READINESS AND READING SUCCESS IN HIGH GRADE LEVELS

A few researchers have used grade levels other than the first in determining the relationship between reading

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9 Guy Bond and Robert Dykstra, "The Cooperative Research Program in First Grade Reading Instruction," Reading Research Quarterly, 2:116-17, Summer, 1967.
readiness and reading achievement. Powell and Parsely investigated the relationship between the results of the Lee-Clark Reading Readiness Test administered in September to 863 first graders and the results of the California Reading Test given to the same students the following year at the beginning of the second grade. Relationships were determined by means of the Pearson product moment correlation technique. The findings indicated that the Lee-Clark Reading Readiness Test was a useful predictor of reading success for children in the second grade. It was found useful primarily as a predictor of the total reading results of the entire group.

Kingston utilized the Metropolitan Readiness Tests and the Stanford Achievement Tests for relating first grade reading readiness to third and fourth grade reading achievement. The scores of the boys were treated separately from those of the girls. Multiple regression equations were calculated to determine the relationships of the total scores and subtest scores on the Metropolitan Readiness Tests and

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the total and subtests scores on the third and fourth grade Stanford Achievement Tests.

First grade readiness scores correlated significantly with reading achievement at both third and fourth grade levels (between .3 and .6). However, the prediction of achievement in the third and fourth grades of individual pupils from their readiness scores in the first grade was not feasible as indicated by the size of the coefficient of correlation obtained in this sample.

III. SEX DIFFERENCES IN READING READINESS AND READING ACHIEVEMENT

There is a general agreement among researchers and educators that sex differences do exist in reading. Carroll's\textsuperscript{12} study of 1100 children at the first grade level showed that statistically significant sex differences appear during the reading readiness period. She concluded that since they existed before formal teaching in reading took place, it was probable that such differences might be due to reading readiness factors alone.

\textsuperscript{12}Marjorie Wight Carroll, "Sex Differences in Reading Readiness at the First Grade Level," \textit{Elementary English}, 25:370-75, October, 1948.
An investigation conducted by Balow\textsuperscript{13} in thirteen first grade classrooms in St. Paul, Minnesota, indicated significant differences in reading readiness and reading achievement in favor of the girls. However, when reading was held constant, the differences between the two sexes were too small to be significant. The data supported a non-maturational theory of sex differences in reading achievement.

Summers\textsuperscript{14} found that in every comparison analyzed the females made significantly greater gains in reading achievement than males. Even when possible initial differences between the sexes were controlled by using the covariance design, the females continued to be significantly superior to the males.

Konski\textsuperscript{15} found no significant sex differences when she measured reading readiness in twelve selected areas. However, when the reading achievement tests were given at

\textsuperscript{13} Irving H. Balow, "Sex Differences in First Grade Reading," \textit{Elementary English}, 40:303-06, 320, March, 1963.


\textsuperscript{15} Virginia J. Konski, "An Investigation into Differences Between Boys and Girls in Selected Reading Readiness Areas and in Reading Achievement" (unpublished Doctoral dissertation, University of Missouri, Columbia, 1951).
the end of first grade, the girls scored significantly higher than the boys.

Wozencraft\textsuperscript{16} reported differences in favor of the girls when she made comparisons between the sexes in respect to the mean scores obtained on Paragraph Meaning, Word Meaning, Reading Average, Arithmetic Reasoning, Arithmetic Computation, and Arithmetic Average of the \textit{Stanford Achievement Test}. More differences were found to be significant in the third grade than in the sixth grade. This might indicate that while girls started off at an advantage in school achievement, boys tended to catch up with them in higher grade levels.

\textbf{IV. READING ACHIEVEMENT GROWTH}

There is little research on reading growth because studies of this kind are usually slow and costly. Among the few investigations is the comparison of reading growth from grade two to seven made by McElroy.\textsuperscript{17} This study was conducted in an upper middle class residential suburban town. The scores used in this investigation were those


from the Metropolitan Readiness Tests in kindergarten; the California Mental Maturity Test in grades two, four, and six; and the California Achievement Test in grades three, five, and seven. The median scores in vocabulary, comprehension and total reading for each grade were plotted on graphs. Comparative studies were then made on the growth patterns revealed on graphs.

McElroy observed an almost identical pattern in vocabulary and comprehension from grades two to seven. She found a lack of growth between the third and fourth grades and between the fourth and fifth grades. There was, however, an acceleration of growth between the fifth and sixth grades.

The purpose of Sutton's investigation was "to study variations in reading achievement of children over a seven-year period who scored high on measures used in kindergarten to determine reading readiness, to observe uniqueness in the individual as he matures, and to discover environmental influences that tend to foster individuality and independence in reading."

Two hundred ten pupils were followed up from kindergarten through the sixth grade by the investigator. For

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each year the parents completed questionnaires about the child's family, health history, child's activities and behavior. The teachers made a summary rating of each child on social adjustment every year. Each child was inter­viewed by the investigator twice, in the second and sixth grades. An intensive study was made of two children with high achievement potential.

Sutton found that precocity and slowness in reading may be detected early in the child's development. She sug­gested that through a longitudinal study of pupils in a given community, a school staff could develop its own concept of normality in child growth and could also con­ceptualize normal reading achievement for each child.

An investigation of the development of reading achievement growth from grades five to nine was done by Shankman.\footnote{Florence Vogel Shankman, "An Investigation of the Development of Reading Achievement Growth from Grades Four to Nine". (unpublished Doctoral dissertation, New York University, 1959).} Information on family background, intelligence level, and yearly grade level scores in reading, language, and spelling as assessed by the California Achievement Tests was obtained from the school permanent record cards. Children whose scores deviated more than two standard de­viations from the mean were studied as individual cases.
Additional information with reference to age, sibling placement, course chosen for high school, and parent's occupation was taken by the investigator for case study.

Using analysis of variance she found significant differences in reading achievement from year to year but not between the sexes. No significant relationships were found between sibling placement, course chosen for high school and parent's occupation and reading achievement. There was a negative correlation between reading achievement in the junior high school and reading achievement in the elementary school.

Eddings²⁰ aimed to identify patterns of reading growth among a group of pupils in grade six. The variables used as areas of investigation in this study were intelligence, physical condition, environmental and experiential background, and emotional and social development.

She constructed three questionnaires on the environmental and experiential background of the subject. These questionnaires were answered by the subjects, their parents and their teachers. Information on the yearly school attendance and general reading achievement of the subjects

²⁰ Inez Clark Eddings, "Patterns of Reading Growth: A Longitudinal Study of Patterns of Reading Growth Throughout the Six Grades in Two Elementary Schools" (unpublished Doctoral dissertation, University of South Carolina, Columbia, 1956).
in the second through the fifth grades was obtained from
school cumulative records. The pupils' general reading per­
formance, intelligence, visual and auditory functioning,
and social and emotional development were measured by the
examiner using standardized tests and individual examinations.
Based on evidence obtained in her study Eddings concluded
that patterns of reading growth are established early among
groups of elementary pupils. She reported that among groups
of normal grade six pupils of comparable mental ability the
reading achievement of girls tends to be higher than that
of boys but within different reading level groups there was
little difference between the patterns of reading growth of
the sexes.

Namkin investigated pupil growth in reading and
arithmetic skills from grade two through grade eight with
the purpose of determining the stability of these growth
patterns and comparing these patterns with those obtained
from longitudinal studies of intelligence. Two hundred
fifty junior high school pupils who had scores available for
the fourth, sixth, seventh, and eighth grades were the sub­
jects of this study. The grade equivalent scores were con­
verted into K-scores to provide an interval scale for the

Sidney Namkin, "Stability of Achievement Test
Scores, A Longitudinal Study of the Reading and Arithmetic
Subtests of the Stanford Achievement Test" (unpublished
Doctoral dissertation, Rutgers, The State University, New
Brunswick, 1966).
study of growth from grades four through eight. A subgroup of seventy pupils was studied from grade two through grade eight.

He observed that patterns of growth below fourth grade were less stable than those of higher grade levels. There was a fairly stable pattern of achievement at the beginning of grade four which becomes increasingly more stable at higher grade levels. The greatest gains were found to be between grades 6.1 and 7.1.

In a study of the reading growth of intermediate pupils in the public schools of Maob, Utah, Dugger\textsuperscript{22} found significant differences between vocabulary development and pupil mobility at the 1 per cent level and comprehension and ability at the 5 per cent level. There were also no significant sex differences in reading readiness among white subjects but there was significant difference in favor of the girls among Negro subjects. Growth was found to be continuous in Pattern Copying, Identical Forms, Auditory Discrimination, Phonemes, Word Meaning, and Listening. The enriched reading readiness program was superior to the basal readers program in Pattern Copying, Identical Forms, and

Word Meaning but were equivalent in Auditory Discrimination and Phonemes.

Ketcham and Laffitte\(^{23}\) plotted the individual records of the mental and reading growth of fifty elementary school children and found a high degree of similarity between individual differences in the longitudinal records for mental age and those for reading age. The growth curves revealed that children achieved their mental abilities and reading skills at different rates which led them to express doubts on the accuracy of predicting mental abilities and academic progress at the completion of the elementary school from performances in the early grades.

V. SUMMARY

The table on page 30 summarizes the studies on predictive validity of reading readiness tests. The different readiness measures, with the exception of the auditory discrimination subtest used by Dykstra which had a correlation coefficient of .19, were found to be good predictors of reading achievement at the end of first and higher grade levels.

TABLE I
PREDICTIVE VALIDITY STUDIES OF READING READINESS TESTS

<table>
<thead>
<tr>
<th>Study</th>
<th>Readiness Test</th>
<th>Reading Test</th>
<th>No. of Cases</th>
<th>Coef. of Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dean</td>
<td>Metropolitan</td>
<td>Metropolitan</td>
<td>116</td>
<td>.59</td>
</tr>
<tr>
<td></td>
<td>Monroe</td>
<td>Metropolitan</td>
<td>116</td>
<td>.41</td>
</tr>
<tr>
<td>Henig</td>
<td>Lee-Clark</td>
<td>Teachers' marks</td>
<td>98</td>
<td>.60</td>
</tr>
<tr>
<td>Mitchell</td>
<td>Metropolitan</td>
<td>Metropolitan</td>
<td>1170</td>
<td>.51 to .63</td>
</tr>
<tr>
<td>Dykstra</td>
<td>Selected</td>
<td>Gates</td>
<td>632</td>
<td>.19 to .46</td>
</tr>
<tr>
<td></td>
<td>Auditory dis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barrett</td>
<td>Selected</td>
<td>Gates</td>
<td>632</td>
<td>.30 to .61</td>
</tr>
<tr>
<td></td>
<td>Visual dis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thackray</td>
<td>Harrison-Stroud</td>
<td>Southgate</td>
<td>182</td>
<td>.59</td>
</tr>
<tr>
<td>Powell &amp;</td>
<td>Lee-Clark</td>
<td>California</td>
<td>863</td>
<td>.43</td>
</tr>
<tr>
<td>Parseley</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kingston</td>
<td>Metropolitan</td>
<td>Stanford</td>
<td>272</td>
<td>.3 to .6</td>
</tr>
</tbody>
</table>

A perusal of the related literature has revealed that most of the skills measured by different reading readiness tests were significantly related to success in reading. The skills commonly evaluated were visual discrimination, auditory discrimination, muscular coordination and motor
skills, linguistic attainments, and knowledge of letters.

The studies reviewed have shown that sex differences do exist in reading readiness and reading achievement. While girls usually have been found to be significantly superior to boys at the beginning reading stage, boys have tended to catch up at the higher grade levels.

The longitudinal studies on reading growth gave evidence of variations in reading achievement of children at each grade level.
CHAPTER III

DESIGN AND PROCEDURES

The purposes of this study, as stated in Chapter I, were two-fold. One was to analyze the growth patterns in reading achievement of groups of children who had been classified according to levels of reading readiness while they were in the first grade. The other purpose was to investigate the early childhood characteristics of good and poor readers in the intermediate grades. Because these were two investigations conducted on two different populations, the description of the design and the procedure of each are discussed separately in this chapter.

I. GROWTH PATTERNS IN READING ACHIEVEMENT

The Design

To investigate the growth patterns in reading achievement a retrospective longitudinal study was made of the development in reading achievement of a group of 300 pupils who were in grade seven in September, 1967. This group consisted of 150 boys and 150 girls belonging to five different categories of reading readiness when they were in first grade. The initial readiness status of each subject was determined from the total readiness score on the Metropolitan
Readiness Tests taken when he was in first grade in September, 1961. Growth in reading achievement was measured by the subtests on Paragraph Meaning and Word Meaning of the Stanford Achievement Test administered every May from 1964 through May, 1968, that is, at each grade level from third through seventh.

A multifactor analysis of variance with repeated measurement design was made on four variables: sex, reading readiness category, "trial" or repeated measurement, and replication. There were five levels of the readiness factor: superior, high normal, average, low normal, and poor risk. Five "trials" were made, one for each grade from grade three through grade seven. There were two replications. The replication factor was introduced into the design because the groups of students in the readiness categories were not random groups. For this reason a category by "trial" interaction might result from initial differences between the groups other than those due to differences in level of reading readiness. Separate analyses were done for Paragraph Meaning and Word Meaning.

Comparisons of the growth patterns of groups of pupils in the various reading readiness categories were made by submitting to graphical and statistical analyses the results of the subtests on Paragraph Meaning and Word
Meaning of the Stanford Achievement Test. Figures were employed to depict graphically the trend of the means of the different categories of reading readiness. The slope of the line for each category was computed. This slope described the rate of increase in reading achievement accompanying the increase in grade level of pupils belonging to each category of reading readiness. Tests of significant differences were made between each pair of slopes. If the difference was found to be significant at the .05 or better than the .05 level, it was concluded that the slopes were significantly different for the categories being compared.

For each category of reading readiness, t tests of significance between each pair of consecutive grades were made to determine if plateaus in the growth patterns existed.

Mean gains from grade to grade and the overall mean gain from grade three through grade seven for each of the five categories of reading readiness were computed and compared to discover if they were positively related to initial status of reading readiness.

Sex differences in reading achievement growth were determined statistically by means of the t test, and graphically by plotting and comparing the means in Paragraph Meaning and Word Meaning by grade and by sex for the superior, high normal, average, low normal, and poor risk cate-
categories of reading readiness.

The Population and Selection of Subjects

The population consisted of all the pupils enrolled in the seventh grade of the public elementary schools in Richmond, British Columbia, who took the Metropolitan Readiness Tests when they were in first grade in 1961 and the Stanford Achievement Test when they were in grades three through seven. Of a total of seventeen schools in the school district with grade seven classes, fourteen were found to have pupils with complete records of the results of the Metropolitan Readiness Tests and the Stanford Achievement Test from grade three through grade seven. Table II on page 36 shows the distribution of subjects among the schools.

The 517 children with complete records of the reading readiness test and the reading achievement tests results were classified into five categories of reading readiness according to their total scores on the Metropolitan Readiness Tests, Form R, taken when they were in first grade in September, 1961. The result of the categorization is shown in Table III on page 36.

The listing of the boys was done separately from the girls. An equal number of pupils for each sex was randomly selected for each group to be able to do an exact and comparable analysis. Since thirty came out to be the smallest
### TABLE II
DISTRIBUTION OF SUBJECTS INCLUDED IN THE STUDY

<table>
<thead>
<tr>
<th>School Number</th>
<th>No. of Grade 7 Pupils</th>
<th>No. with MRT and SAT Results (Gr. 3-Gr. 7)</th>
<th>No. of Pupils Included in the Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>120</td>
<td>84</td>
<td>53</td>
</tr>
<tr>
<td>2</td>
<td>73</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>53</td>
<td>12</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>87</td>
<td>51</td>
<td>26</td>
</tr>
<tr>
<td>5</td>
<td>94</td>
<td>56</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>88</td>
<td>66</td>
<td>37</td>
</tr>
<tr>
<td>7</td>
<td>90</td>
<td>40</td>
<td>22</td>
</tr>
<tr>
<td>8</td>
<td>88</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>9</td>
<td>84</td>
<td>34</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>86</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>11</td>
<td>73</td>
<td>44</td>
<td>22</td>
</tr>
<tr>
<td>12</td>
<td>47</td>
<td>19</td>
<td>13</td>
</tr>
<tr>
<td>13</td>
<td>38</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>14</td>
<td>90</td>
<td>83</td>
<td>28</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1111</strong></td>
<td><strong>517</strong></td>
<td><strong>300</strong></td>
</tr>
</tbody>
</table>

### TABLE III
DISTRIBUTION OF PUPILS ACCORDING TO READINESS CATEGORIES

<table>
<thead>
<tr>
<th>Readiness Categories</th>
<th>Total Score</th>
<th>No. of Pupils</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Boys</td>
</tr>
<tr>
<td>Superior</td>
<td>90 - 100</td>
<td>30</td>
</tr>
<tr>
<td>High Normal</td>
<td>80 - 89</td>
<td>44</td>
</tr>
<tr>
<td>Average</td>
<td>65 - 79</td>
<td>80</td>
</tr>
<tr>
<td>Low Normal</td>
<td>40 - 64</td>
<td>71</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>0 - 39</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>258</strong></td>
<td><strong>259</strong></td>
</tr>
</tbody>
</table>
number among the groups, thirty boys and thirty girls were randomly selected for each of five categories of reading readiness. For purposes of replication these groups of thirty subjects were each further randomly divided into two groups of fifteen for each category.

**Procedures in Collecting Data**

The testing program in Richmond provided for a district-wide testing schedule every school year. Hence, longitudinal records of intellectual and academic growth of pupils were available in almost all of the elementary schools in the school district. However, the records varied from school to school and sometimes from class to class. Many of the pupils had school permanent record cards which did not include the subtest results and had to be excluded from the sample.

The *Metropolitan Readiness Tests* results and the yearly grade level scores on the Word Meaning and Paragraph Meaning subtest in reading as determined by the *Stanford Achievement Test* were obtained from the school permanent record cards. Data not available from the school permanent record cards were taken from reports on promotion and *Stanford Achievement Test* class records and class analysis charts prepared by the teachers after each examination. The results of the tests listed in Table IV on page 38 were utilized in this study.
TABLE IV
STANDARDIZED TESTS USED IN THE STUDY

<table>
<thead>
<tr>
<th>Name of Test</th>
<th>Form of Test</th>
<th>Date Given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metropolitan Readiness Tests</td>
<td>R</td>
<td>Sept., 1961</td>
</tr>
<tr>
<td>Stanford Achievement Test</td>
<td>J</td>
<td>May, 1964</td>
</tr>
<tr>
<td>Stanford Achievement Test</td>
<td>K</td>
<td>May, 1965</td>
</tr>
<tr>
<td>Stanford Achievement Test</td>
<td>J</td>
<td>May, 1966</td>
</tr>
<tr>
<td>Stanford Achievement Test</td>
<td>K</td>
<td>May, 1967</td>
</tr>
<tr>
<td>Stanford Achievement Test</td>
<td>W</td>
<td>May, 1968</td>
</tr>
</tbody>
</table>

Parallel forms of the fourth edition of the Stanford Achievement Test, Forms J and K, were alternately used when the pupils were in grades three through six but Form W of the fifth edition was used in grade seven. However, the equivalence of the two editions has been determined by the publishers from grades five through nine which makes it possible for the users of the tests to compare performances on the two editions. Hence, the scores on Form W were converted to equivalent scores on Form J and Form K by using a table provided by the publishers.

The grade equivalent scores on the Word Meaning and Paragraph Meaning subtests were converted into K-scores by using the K-tables found in the Manual to the Stanford Achievement Test. This procedure was necessary because
grade equivalents do not constitute series of equal units. A gain of one year from grade one to grade two may not represent the same amount of growth in ability as does a gain of a year from grade six to grade seven. Since this study involved accurate measurement of growth in reading achievement, there was a need for a scale of equal units.

The K-scales\(^1\) have units that are approximately equal throughout the entire range of the scale. Each unit is equal to one-seventh the standard deviation of the national grade five frequency distribution. The average performance of grade 10 children was selected as the reference point and was assigned a grade score of 100.

K-units are obtained by fitting a series of overlapping frequency curves on the same abscissa in such a way that the proportions of pupils in consecutive grades who obtain the same score in a particular test correspond to the proportions given by the original data. Equal units then are equal distances along the common abscissa.

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**Description of the Tests Used in the Study**

The Metropolitan Readiness Tests. The Metropolitan Readiness Tests are designed to measure the different as-

pects of readiness for school instruction of beginning pupils. These tests are usually administered at the end of kindergarten or beginning of first grade. The six sub-tests contained in a sixteen-page booklet are Word Meaning, Sentences, Information, Matching Numbers, and Copying. These subtests are devised to measure traits and abilities of school beginners such as richness of verbal concepts, comprehension of phrases and sentences, visual-perceptual skills, knowledge of numerical and quantitative relationships, and sensory-motor abilities.

The reliability data for the Metropolitan Readiness Tests are shown in Table V below. The correlations given are median values of six measurements of groups of first graders.

**TABLE V**

RELIABILITY COEFFICIENTS AND RELATED DATA, METROPOLITAN READINESS TESTS, GRADE I*

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Meaning</td>
<td>.583</td>
<td>15.61</td>
<td>2.51</td>
<td>15.92</td>
<td>2.26</td>
<td>1.62</td>
</tr>
<tr>
<td>Sentences</td>
<td>.535</td>
<td>10.52</td>
<td>2.39</td>
<td>10.86</td>
<td>2.27</td>
<td>1.63</td>
</tr>
<tr>
<td>Information</td>
<td>.586</td>
<td>12.02</td>
<td>2.06</td>
<td>12.39</td>
<td>1.89</td>
<td>1.33</td>
</tr>
<tr>
<td>Matching</td>
<td>.773</td>
<td>13.19</td>
<td>4.23</td>
<td>14.19</td>
<td>3.75</td>
<td>2.02</td>
</tr>
<tr>
<td>Numbers</td>
<td>.839</td>
<td>13.50</td>
<td>4.78</td>
<td>14.38</td>
<td>4.85</td>
<td>1.92</td>
</tr>
<tr>
<td>Copying</td>
<td>.762</td>
<td>5.26</td>
<td>2.76</td>
<td>5.31</td>
<td>2.75</td>
<td>1.35</td>
</tr>
<tr>
<td>Tests 1-4</td>
<td>.828</td>
<td>51.07</td>
<td>8.83</td>
<td>53.20</td>
<td>8.13</td>
<td>3.66</td>
</tr>
<tr>
<td>Tests 1-6</td>
<td>.890</td>
<td>69.71</td>
<td>13.92</td>
<td>72.96</td>
<td>13.12</td>
<td>4.62</td>
</tr>
</tbody>
</table>

Reviewers of the Metropolitan Readiness Tests claimed that these tests are among the most widely used and among the superior readiness tests now available.\(^2\) Table VI below shows the correlation between the Metropolitan Readiness Tests and the Metropolitan Achievement Tests.

**TABLE VI**

**PREDICTIVE VALIDITY OF METROPOLITAN READINESS TESTS AS FOUND FOR THE 919 FIRST-GRADE PUPILS IN THE WHITE SCHOOLS OF A COUNTY SYSTEM*\(^*\)

| Correlation with Metropolitan Achievement Tests (1959 Edition, Primary 1 Battery) |
|---------------------------------|---------------------------------|---------------------------------|---------------------------------|---------------------------------|
| Met. Read. Tests                | Word Knowledge                  | Word Discriminating             | Ave. Reading Tests and Skills   | Mean S.D.                       |
| Tests 1-4                       | .467                            | .462                            | .427                            | .482                            | .544                            | 53.4                            | 9.3                            |
| Test 5                          | .563                            | .581                            | .512                            | .589                            | .622                            | 15.1                            | 5.1                            |
| Tests 1-6 (Total)               | .558                            | .557                            | .511                            | .578                            | .632                            | 75.1                            | 15.6                           |
| Mean                            | 1.87                            | 1.99                            | 2.01                            | 1.96                            | 2.31                            |                                  |                                 |
| S.D.                            | .44                             | .61                             | .59                             | .52                             | .61                             |                                  |                                 |


The coefficients of correlation between the Metropolitan Readiness Tests and the Metropolitan Achievement Tests ranged from .427 to .632. In this large sample of 919 pupils these coefficients of correlation which are significant at the .005

level\textsuperscript{3} proved that the Metropolitan Readiness Tests are good predictors of success at the first grade level.

The Stanford Achievement Test. The Stanford Achievement Test is designed to measure outcomes of elementary school instruction. It consists of different levels of batteries for various grades and covers different subjects. Periodic revisions of this test have been made.

The Word Meaning subtest of the Stanford Achievement Test is a multiple-choice type. It consists of items which measure knowledge of synonyms, of simple definitions, and ready associations. There are also items which measure higher-level comprehension of concepts represented by words, and fullness of understanding of terms. Words included in this test are those that occur most frequently in children's speaking and reading vocabularies.

The Paragraph Meaning subtest measures the child's comprehension of the paragraph by selecting the proper word for each omission in the paragraph. It tests also the pupil's ability to understand connected discourse. Paragraphs selected are graduated in difficulty and are on subjects of interest to children. These paragraphs are

based on general reading materials, science, geography, history, fine arts, and literature.

Reviews of the Stanford Achievement Test are favorable. Agatha Townsend\textsuperscript{4} said that the Stanford Achievement Test holds a position of importance in the testing program which is hard to duplicate because it can be used with or without the whole battery; it has five equivalent forms for each level; its scoring system permits a longitudinal growth study over a wide range; and the results within these limits are unusually dependable. James R. Hobson\textsuperscript{5} remarked that the reading subtests of the Stanford Achievement Test are the oldest in a widely used achievement battery and remain one of the most satisfactory reading tests. Mariam M. Bryan stated that "the 1964 edition of the Stanford Achievement Test still rates high among standardized test batteries designed for use at the elementary school levels. . . . The Stanford Achievement Test will offer keen competition to most other standardized tests because (a) it offers a means of continuous measurement from grade 1 through grade 9 and (b) many test users feel comfortable working with it as a


result of long experience." Robinson commented that this test is a dependable measure of reading achievement and among the best survey tests for elementary schools because of its format, contents, standardization, norms, and ease of administration and scoring.

II. EARLY CHILDHOOD CHARACTERISTICS OF GOOD AND POOR READERS IN GRADE V

The investigator had originally planned to conduct this part of the study on the same population used for the growth study. However, because of the retrospective nature of this study, it was necessary to depend on data already available on permanent record cards and other school records. Unfortunately, in the school district where the growth study was undertaken, there were no records of the subtests scores on the Metropolitan Readiness Tests. The data from these subtests scores were necessary in the second part of this study because they are standardized measures of initial status in various aspects of readiness. Therefore, rather than drop this part of the study which was considered impor-


tant, it was decided to select another school district where subtests scores of the Metropolitan Readiness Tests were available.

The Design

The ex post facto design was used in this second part of the study. Ex post facto research is one "in which the independent variable or variables have already occurred and in which the researcher starts with the observation of a dependent variable or variables. He then studies the independent variables in retrospect for their positive relations to, and effect on, the dependent variable or variables."\(^8\)

In the ex post facto study an investigator takes things as they are. He can not control the independent variables. Neither can he make use of randomization because the subjects and treatments are already assigned to groups. Because of this lack of control it is difficult to draw valid conclusions from ex post facto research. There is always a danger of making erroneous interpretations because of the inability to manipulate independent variables that already exist in the individuals studied. Great care

and caution should be practised when interpreting the results of ex post facto investigations.

In this particular study, the dependent variable was reading achievement in grade five. The independent variables were school entrance age, home background, and early childhood physical, intellectual, social, and emotional characteristics which could not be manipulated.

It was not the purpose of this study to state any causal connection between the dependent variable and any of the independent variables but to find out which, if any, of these independent variables were related to and might influence success in reading in the intermediate grades.

Case studies were made on a sample of good and poor readers. Parents were interviewed to gather facts about their child's preschool, kindergarten, and first grade experiences that might have contributed to his becoming a good or a poor reader by the time he was in grade five. The data on readiness category, richness of verbal concepts, vocabulary, visual perception, auditory perception, number knowledge, and motor control were based on the results of the Metropolitan Readiness Tests administered to each child when he was in kindergarten.

To be able to ascertain which of the characteristics investigated distinguished the good readers from the
poor readers, the Fisher exact probability test\textsuperscript{9} was used. This test determined whether the traits studied differentiated significantly between the successful and unsuccessful readers in the fifth grade.

Selection of Subjects for the Study

The population for this part of the study consisted of 315 grade five pupils, 154 boys and 161 girls, in five elementary schools in Vancouver who took the Gates-MacGinitie Reading Tests in May, 1968. The children belonging to the top 27 per cent were classified as good readers and those in the bottom 27 per cent were considered as poor readers. Twenty-seven per cent was chosen as the cut-off point because Kelley\textsuperscript{10} has shown that for normally distributed scores, in order to yield upper and lower groups which are unquestionably different with respect to the trait in question, and at the same time to minimize loss of information, 27 per cent should be selected at each extreme.

The subjects for the case studies were selected from the top 27 per cent and the bottom 27 per cent of the popu-


lation. It was arbitrarily decided that an investigation of sixteen pupils from each group would be sufficient to show distinguishing characteristics in preschool and beginning school years of good and poor readers. A sampling plan in which 20 per cent of students were selected randomly from each of the five schools was used to obtain the thirty-two subjects for case studies.

Procedures in Collecting the Data

The school entrance age, readiness category, subtest scores and total score on the Metropolitan Readiness Tests administered to the subjects in May, 1963 were obtained from a list compiled by the Department of Research and Special Services of the Vancouver School Board. The date of birth, address and name of parents, and the results of the Gates-MacGinitie Reading Tests were gathered from the school permanent record cards.

An interview guide was used while interviewing parents to gather pertinent information on traits and experiences of their child before he went to school and during his early school years. The Interview Guide\(^{11}\) included background information, physical, intellectual,

\(^{11}\)See Appendix A, pp. 124-127.
social, and emotional characteristics in early childhood days of the subject of the case study.

III. SUMMARY

This study consisted of two separate investigations. The first was a retrospective longitudinal study of the patterns of growth in reading achievement of 300 grade seven children with different initial status of reading readiness. Reading achievement growth was based on K-scores on Word Meaning and Paragraph Meaning subtests of the Stanford Achievement Test administered yearly from grade three through grade seven. The growth patterns were analyzed and compared graphically and statistically by using the analysis of variance and the t test.

In the second investigation the ex post facto method was used in determining early childhood characteristics that were related to the reading achievement of sixteen good readers and sixteen poor readers in grade five. The Fisher exact probability test was applied to determine which of the traits investigated distinguished the poor from the good readers.
CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The presentation and analysis of data are presented in the order in which the hypotheses are stated. The findings on the study of growth patterns in reading achievement of groups of children with different initial status of reading readiness are discussed first. This is followed by the discussion of the characteristics in preschool, kindergarten, and first grade of children who have become good and poor readers in the fifth grade.

I. ANALYSIS OF VARIANCE

Tables VII and VIII present the results of the analysis of variance made to determine if there were significant differences among the fixed factors: sex, reading readiness category and "trial" and the random factor, replication. The difference between sexes was found to be significant at the .05 level. The five categories of reading readiness and the "trial" or the repeated measurements each year from grade three through grade seven were significantly different at the .01 level on both Paragraph Meaning and Word Meaning subtests of the Stanford Achievement Test.

Interactions between replication and "trial" reached the .025 level in Word Meaning. The category by "trial"
## TABLE VII

### ANALYSIS OF VARIANCE (PARAGRAPH MEANING)

<table>
<thead>
<tr>
<th>Source of Variation*</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>Expected Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Ss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>140.5760</td>
<td>1</td>
<td>140.5760 750 $\sigma_{A}^2$ + 5 $\sigma_{e}^2$</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>634.7972</td>
<td>1</td>
<td>634.7972 750 $\sigma_{A}^2$ + 375 $\sigma_{AB}^2$ + 5 $\sigma_{e}^2$</td>
<td>220.26 $p &lt; .05$</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>20623.9319</td>
<td>4</td>
<td>5155.9830 300 $\sigma_{C}^2$ + 150 $\sigma_{AC}^2$ + 5 $\sigma_{e}^2$</td>
<td>137.24 $p &lt; .001$</td>
<td></td>
</tr>
<tr>
<td>AB</td>
<td>2.8821</td>
<td>1</td>
<td>2.8821 375 $\sigma_{AB}^2$ + 5 $\sigma_{e}^2$</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>AC</td>
<td>150.2778</td>
<td>4</td>
<td>37.5695 150 $\sigma_{AC}^2$ + 5 $\sigma_{e}^2$</td>
<td>.32</td>
<td></td>
</tr>
<tr>
<td>BC</td>
<td>1223.0769</td>
<td>4</td>
<td>305.7692 150 $\sigma_{AC}^2$ + 75 $\sigma_{ABC}^2$ + 5 $\sigma_{e}^2$</td>
<td>2.16</td>
<td></td>
</tr>
<tr>
<td>ABC</td>
<td>566.4859</td>
<td>4</td>
<td>141.6215 75 $\sigma_{ABC}^2$ + 5 $\sigma_{e}^2$</td>
<td>1.19</td>
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</tr>
<tr>
<td>I( ABC)</td>
<td>33230.6025</td>
<td>280</td>
<td>118.6807 5 $\sigma_{e}^2$</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Ss.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>55543.0581</td>
<td>4</td>
<td>13885.7645 300 $\sigma_{D}^2$ + 150 $\sigma_{AD}^2$ + 5 $\sigma_{e}^2$</td>
<td>529.68 $p &lt; .001$</td>
<td></td>
</tr>
<tr>
<td>AD</td>
<td>104.8608</td>
<td>4</td>
<td>26.2152 150 $\sigma_{AD}^2$ + 1 $\sigma_{e}^2$</td>
<td>1.36</td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>253.7168</td>
<td>4</td>
<td>63.4292 150 $\sigma_{AD}^2$ + 75 $\sigma_{ABC}^2$ + 1 $\sigma_{e}^2$</td>
<td>1.77</td>
<td></td>
</tr>
<tr>
<td>CD</td>
<td>808.2451</td>
<td>4</td>
<td>50.5153 60 $\sigma_{CD}^2$ + 30 $\sigma_{ABC}^2$ + 1 $\sigma_{e}^2$</td>
<td>4.00 $p &lt; .01$</td>
<td></td>
</tr>
<tr>
<td>ABD</td>
<td>143.1619</td>
<td>4</td>
<td>35.7905 75 $\sigma_{AD}^2$ + 1 $\sigma_{e}^2$</td>
<td>1.86</td>
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<tr>
<td>ACD</td>
<td>202.1592</td>
<td>16</td>
<td>12.6349 30 $\sigma_{CD}^2$ + 1 $\sigma_{e}^2$</td>
<td>.66</td>
<td></td>
</tr>
<tr>
<td>BCD</td>
<td>297.6321</td>
<td>16</td>
<td>18.6020 30 $\sigma_{CD}^2$ + 15 $\sigma_{ABC}^2$ + 1 $\sigma_{e}^2$</td>
<td>1.05</td>
<td></td>
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<tr>
<td>ABCD</td>
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<td>16</td>
<td>17.6853 15 $\sigma_{D}^2$ + 1 $\sigma_{e}^2$</td>
<td>.92</td>
<td></td>
</tr>
<tr>
<td>ID(ABC)</td>
<td>21523.0273</td>
<td>1120</td>
<td>19.2170 1 $\sigma_{e}^2$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*A = Replication (random)  
B = Sex (fixed)  
C = Category (fixed)  
D = Trial (fixed)  
I = Subject (random)
<table>
<thead>
<tr>
<th>Source of Variation*</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>Expected Mean Square</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Between Ss.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>93.4534</td>
<td>1</td>
<td>93.4534</td>
<td>750 $\sigma_A^2$ + 5 $\sigma_{e_1}^2$</td>
<td>.75</td>
</tr>
<tr>
<td>B</td>
<td>1481.2533</td>
<td>1</td>
<td>1481.2533</td>
<td>750 $\sigma_A^2$ + 375 $\sigma_{AB}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>416.00 /PL.05</td>
</tr>
<tr>
<td>C</td>
<td>24425.1082</td>
<td>4</td>
<td>6106.2770</td>
<td>300 $\sigma_C^2$ + 150 $\sigma_{AC}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>199.61 /PL.001</td>
</tr>
<tr>
<td>AB</td>
<td>3.5607</td>
<td>1</td>
<td>3.5607</td>
<td>375 $\sigma_{AB}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>.03</td>
</tr>
<tr>
<td>AC</td>
<td>122.3613</td>
<td>4</td>
<td>30.5903</td>
<td>150 $\sigma_{AC}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>.25</td>
</tr>
<tr>
<td>BC</td>
<td>11283.1128</td>
<td>4</td>
<td>320.7782</td>
<td>150 $\sigma_{AC}^2$ + 75 $\sigma_{ABC}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>1.68</td>
</tr>
<tr>
<td>ABC</td>
<td>764.5945</td>
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<td>191.1486</td>
<td>75 $\sigma_{ABC}^2$ + 5 $\sigma_{e_1}^2$</td>
<td>1.54</td>
</tr>
<tr>
<td>I(ABC)</td>
<td>34728.8027</td>
<td>280</td>
<td>124.0314</td>
<td>5 $\sigma_{e_1}^2$</td>
<td></td>
</tr>
<tr>
<td><strong>Within Ss.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>83015.0498</td>
<td>4</td>
<td>20753.7625</td>
<td>300 $\sigma_C^2$ + 150 $\sigma_{AC}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>298.91 /PL.001</td>
</tr>
<tr>
<td>AD</td>
<td>277.7227</td>
<td>4</td>
<td>69.4307</td>
<td>150 $\sigma_{AC}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>2.94 /PL.025</td>
</tr>
<tr>
<td>BD</td>
<td>939.1133</td>
<td>4</td>
<td>234.7783</td>
<td>150 $\sigma_{AC}^2$ + 75 $\sigma_{ABC}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>15.38 /PL.025</td>
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<tr>
<td>CD</td>
<td>5098.8418</td>
<td>16</td>
<td>318.6776</td>
<td>60 $\sigma_{CD}^2$ + 30 $\sigma_{ACD}^2$ + 11 $\sigma_{e_1}^2$</td>
<td>14.53 /PL.001</td>
</tr>
<tr>
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<td>4</td>
<td>15.2609</td>
<td>75 $\sigma_{ABC}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>.65 /PL.001</td>
</tr>
<tr>
<td>ACD</td>
<td>350.8730</td>
<td>16</td>
<td>21.9296</td>
<td>30 $\sigma_{ACD}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>.93</td>
</tr>
<tr>
<td>BCD</td>
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<td>22.5097</td>
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<td>1.73</td>
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<td>208.0773</td>
<td>16</td>
<td>13.0048</td>
<td>15 $\sigma_{ABCD}^2$ + 1 $\sigma_{e_1}^2$</td>
<td>.55</td>
</tr>
<tr>
<td><strong>ID(ABC)</strong></td>
<td>264657.9944</td>
<td>1120</td>
<td>23.6232</td>
<td>1 $\sigma_{e_1}^2$</td>
<td></td>
</tr>
</tbody>
</table>

*A = Replication (random)  
B = Sex (fixed)  
C = Category (fixed)  
D = Trial (fixed)  
I = Subjects (random)
interaction was significant at the .01 level in Word Meaning and highly significant at the .001 level in Paragraph Meaning. This means that it is possible that factors other than readiness category might be responsible for the differences among the groups of children included in this study. However, this would be a slim possibility because the replication by category by "trial" interactions were not significant. This would mean that the category by "trial" pattern was the same for both replications. Thus if it was not category that accounted for the difference, it would have to be something else systematic and common to both samples such as socio-economic background or parents' education.

II. HYPOTHESIS 1

There is no difference among the patterns of group means in reading achievement of pupils belonging to each of the superior, high normal, average, low normal, and poor risk categories of reading readiness.

The mean K scores of the total group of subjects used in this investigation on Paragraph Meaning and Word Meaning are shown in Table IX and Table X on page 54. A grade to grade comparison of these means between readiness categories presented in Table XI reveals significant differences beyond the .05 level for almost all pairs of
### TABLE IX

**MEAN K SCORES BY GRADE ON PARAGRAPH MEANING IN THE STANFORD ACHIEVEMENT TEST OF BOTH SEXES IN THE SUPERIOR, HIGH NORMAL, AVERAGE, LOW NORMAL AND POOR RISK CATEGORIES OF READING READINESS**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>82.24</td>
<td>86.58</td>
<td>92.66</td>
<td>95.65</td>
<td>102.82</td>
</tr>
<tr>
<td>High Normal</td>
<td>77.65</td>
<td>81.66</td>
<td>86.84</td>
<td>89.67</td>
<td>96.60</td>
</tr>
<tr>
<td>Average</td>
<td>76.17</td>
<td>79.48</td>
<td>84.13</td>
<td>86.70</td>
<td>93.13</td>
</tr>
<tr>
<td>Low Normal</td>
<td>75.35</td>
<td>77.93</td>
<td>81.74</td>
<td>85.31</td>
<td>91.54</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>75.21</td>
<td>77.44</td>
<td>82.16</td>
<td>84.35</td>
<td>89.92</td>
</tr>
</tbody>
</table>

### TABLE X

**MEAN K SCORES BY GRADE ON WORD MEANING IN THE STANFORD ACHIEVEMENT TEST OF BOTH SEXES IN THE SUPERIOR, HIGH NORMAL, AVERAGE, LOW NORMAL AND POOR RISK CATEGORIES OF READING READINESS**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>75.04</td>
<td>78.28</td>
<td>87.44</td>
<td>94.02</td>
<td>104.52</td>
</tr>
<tr>
<td>High Normal</td>
<td>72.35</td>
<td>75.50</td>
<td>81.30</td>
<td>85.99</td>
<td>94.77</td>
</tr>
<tr>
<td>Average</td>
<td>70.62</td>
<td>73.29</td>
<td>78.31</td>
<td>83.04</td>
<td>90.25</td>
</tr>
<tr>
<td>Low Normal</td>
<td>70.29</td>
<td>73.29</td>
<td>76.52</td>
<td>80.53</td>
<td>86.69</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>69.18</td>
<td>72.42</td>
<td>76.67</td>
<td>79.39</td>
<td>86.15</td>
</tr>
</tbody>
</table>
## TABLE XI
COMPARISON OF MEANS BETWEEN READINESS CATEGORIES BY GRADE OF BOTH SEXES

<table>
<thead>
<tr>
<th>Grade</th>
<th>Readiness Categories Compared</th>
<th>Paragraph t Value</th>
<th>t Prob.</th>
<th>Word Meaning t Value</th>
<th>t Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Superior, High Normal</td>
<td>7.269</td>
<td>.000</td>
<td>5.919</td>
<td>.000</td>
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<tr>
<td></td>
<td>Superior, Average</td>
<td>10.389</td>
<td>.000</td>
<td>9.138</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Superior, Low Normal</td>
<td>12.580</td>
<td>.000</td>
<td>10.690</td>
<td>.000</td>
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<tr>
<td></td>
<td>Superior, Poor Risk</td>
<td>11.707</td>
<td>.000</td>
<td>13.082</td>
<td>.000</td>
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<tr>
<td></td>
<td>High Normal, Average</td>
<td>3.042</td>
<td>.003</td>
<td>4.008</td>
<td>.000</td>
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<td></td>
<td>High Normal, Low Normal</td>
<td>5.192</td>
<td>.000</td>
<td>5.324</td>
<td>.000</td>
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<tr>
<td></td>
<td>High Normal, Poor Risk</td>
<td>44.820</td>
<td>.000</td>
<td>8.095</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Average, Low Normal</td>
<td>2.183</td>
<td>.028</td>
<td>0.792</td>
<td>.435*</td>
</tr>
<tr>
<td></td>
<td>Average, Poor Risk</td>
<td>2.146</td>
<td>.031</td>
<td>3.383</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Low Normal, Poor Risk</td>
<td>0.369</td>
<td>.712*</td>
<td>2.902</td>
<td>.004</td>
</tr>
<tr>
<td>4</td>
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<td>.000</td>
<td>4.706</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Superior, Average</td>
<td>8.157</td>
<td>.000</td>
<td>8.856</td>
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</tr>
<tr>
<td></td>
<td>Superior, Low Normal</td>
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<td>.000</td>
<td>8.905</td>
<td>.000</td>
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<tr>
<td></td>
<td>Superior, Poor Risk</td>
<td>11.721</td>
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<tr>
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<tr>
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<td>0.011</td>
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<tr>
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<td>Average, Poor Risk</td>
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<td>.005</td>
<td>1.724</td>
<td>.082*</td>
</tr>
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<td>.418*</td>
<td>11.724</td>
<td>.082*</td>
</tr>
<tr>
<td>Readiness Categories Compared</td>
<td>Paragraph Meaning</td>
<td>Word Meaning</td>
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</tr>
<tr>
<td></td>
<td>t Value</td>
<td>t Prob.</td>
<td>t Value</td>
<td>t Prob.</td>
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</tr>
<tr>
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<tr>
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<td>10.002</td>
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<tr>
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<td>.000</td>
<td>12.220</td>
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<tr>
<td>Superior, Poor Risk</td>
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<td>.003</td>
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<td>3.122</td>
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<tr>
<td>Low Normal, Poor Risk</td>
<td>-0.588</td>
<td>.565*</td>
<td>-0.247</td>
<td>.792*</td>
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<tr>
<td>Superior, High Normal</td>
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<td>.000</td>
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<td>.003</td>
<td>4.151</td>
<td>.000</td>
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<tr>
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<td>.191*</td>
<td>1.498</td>
<td>.131*</td>
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</tr>
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<td>Grade</td>
<td>Readiness Categories Compared</td>
<td>Paragraph Meaning</td>
<td>Word Meaning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-----------------------------</td>
<td>-------------------</td>
<td>--------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>t Value</td>
<td>t Prob.</td>
<td>t Value</td>
<td>t Prob.</td>
</tr>
<tr>
<td>7</td>
<td>Superior, High Normal</td>
<td>5.633</td>
<td>.000</td>
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<td>.000</td>
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<tr>
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<td>Superior, Average</td>
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<td>.000</td>
<td>11.072</td>
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<tr>
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<td>.000</td>
<td>13.711</td>
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<td>Superior, Poor Risk</td>
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<td>.000</td>
<td>14.124</td>
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<tr>
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<tr>
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<td>High Normal, Low Normal</td>
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<td>.000</td>
<td>6.228</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>High Normal, Poor Risk</td>
<td>6.461</td>
<td>.000</td>
<td>6.642</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Average, Low Normal</td>
<td>1.641</td>
<td>.098*</td>
<td>3.214</td>
<td>.002</td>
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<tr>
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<td>Average, Poor Risk</td>
<td>3.232</td>
<td>.002</td>
<td>3.698</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>Low Normal, Poor Risk</td>
<td>1.712</td>
<td>.084*</td>
<td>0.479</td>
<td>.638*</td>
</tr>
</tbody>
</table>

* not significant
readiness categories. The comparisons that did not reach the .05 level were those on Paragraph Meaning between the low normal and poor risk groups in grades three through seven and between the average and low normal groups in grade seven only and on Word Meaning between the low normal and poor risk groups in grades four through six, between the average and low normal groups in grades three and four, and between the average and poor risk groups in grade four.

It can be seen in Table XII that there were significant differences at better than the .01 level between the slopes of the growth curves of the different reading readiness categories. Only the comparisons between the average and the low normal groups on Paragraph Meaning and the low normal and poor risk groups on Word Meaning fell short of the .05 level. It is probable that because of the large sample most of the differences became significant although not obviously important. Moreover, when slopes were compared least squares straight lines were fitted to the data. Although "linear regression equations may serve quite well to describe statistical relations that are roughly like linear functions"\(^1\) the tests of difference between the

TABLE XII
COMPARISON OF SLOPES BETWEEN READING READINESS CATEGORIES OF BOTH SEXES

<table>
<thead>
<tr>
<th>Readiness Categories Compared</th>
<th>Paragraph Meaning df</th>
<th>t Value</th>
<th>t Prob.</th>
<th>Word Meaning t Value</th>
<th>t Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior, High Normal</td>
<td>118</td>
<td>3.425</td>
<td>.000</td>
<td>16.030</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Average</td>
<td>118</td>
<td>6.803</td>
<td>.000</td>
<td>20.588</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Low Normal</td>
<td>118</td>
<td>7.832</td>
<td>.000</td>
<td>25.000</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Poor Risk</td>
<td>118</td>
<td>10.417</td>
<td>.000</td>
<td>27.692</td>
<td>.000</td>
</tr>
<tr>
<td>High Normal, Average</td>
<td>118</td>
<td>3.546</td>
<td>.000</td>
<td>4.964</td>
<td>.000</td>
</tr>
<tr>
<td>High Normal, Low Normal</td>
<td>118</td>
<td>4.667</td>
<td>.000</td>
<td>11.189</td>
<td>.000</td>
</tr>
<tr>
<td>High Normal, Poor Risk</td>
<td>118</td>
<td>7.180</td>
<td>.000</td>
<td>13.115</td>
<td>.000</td>
</tr>
<tr>
<td>Average, Low Normal</td>
<td>118</td>
<td>0.714</td>
<td>.455*</td>
<td>7.246</td>
<td>.000</td>
</tr>
<tr>
<td>Average, Poor Risk</td>
<td>118</td>
<td>3.333</td>
<td>.000</td>
<td>8.571</td>
<td>.000</td>
</tr>
<tr>
<td>Low Normal, Poor Risk</td>
<td>118</td>
<td>2.817</td>
<td>.007</td>
<td>0.915</td>
<td>.355*</td>
</tr>
</tbody>
</table>

* not significant

Slopes in this particular sample should be treated with considerable caution. Table XV on page 68 shows that the mean gains from grade to grade were not relatively constant. The differences in the "trial" means were large in grades four to five. They became very small in grades five to six but increased again in grades six to seven. Figures 1 and 2 on pages 60 and 61 show graphically the trend of the means of the total group for each category of reading readiness in Paragraph Meaning and Word Meaning, respectively. The figures reveal that the plots are curvilinear, hence fitting straight lines to them is apt to give only a crude picture of their trend.
Figure 1. Trend of means on Paragraph Meaning of both sexes in five levels of reading readiness.
Figure 2. Trend of means on Word Meaning of both sexes in five levels of reading readiness.
On Paragraph Meaning, the greatest difference between the superior group and the high normal group was in grade six. The difference was greatest in grade five between the high normal and average groups and between the average and low normal groups. The low normal and poor risk groups appeared to be most different in grade seven. The difference, however, was slight and was not significant.

On Word Meaning, the greatest difference was in grade seven for the three highest categories of reading readiness. The biggest difference between the low normal and the poor risk groups was in grade six.

The growth curves reveal that pupils who started superior in reading readiness, on the average, remained superior through grade seven. They even tended to progress more rapidly than those children in other categories of reading readiness with a faster growth rate on Word Meaning than on Paragraph Meaning.

The high normal and the average groups exhibited patterns of growth on Paragraph Meaning that appear similar to the superior group except for the general levels. However, the semi-plateau in grades five to six is more marked in the high normal and average groups than in the superior. On Word Meaning, the rate of growth of the high normal group slowed down from grade four through grade six.
The pupils in the three higher categories maintained their superiority over those in the two lower groups from grade three through grade seven.

Tests of difference between the means of the low normal and the poor risk groups showed that their growth patterns did not differ significantly. However, while the pupils in the low normal category had a slow but continuous growth from the third grade through the seventh grade, the rate of growth of those in the poor risk category fluctuated from grade to grade.

It is interesting to note that the increase in growth in reading achievement was more marked in grade seven than in any other grade. This may be explained by the fact that since "achievement in school . . . tends to be an expression of total growth" the spurts in reading achievement growth most likely accompany spurts in sex maturing, general physical growth, and intellectual development during pre-adolescent years. It is also possible that many of the children would already have mastered the skills in reading by the time they were in grade seven and thus got higher scores on the reading subtests of the Stanford Achievement Test.

---

Based on the evidence presented, the hypothesis that there is no difference among the patterns of group means in reading achievement was rejected for the superior, high normal, and average categories but was accepted for the low normal and poor risk categories of reading readiness.

III. HYPOTHESIS 2

There is a plateau in grade four in the reading growth curve for each category of reading readiness.

To find out if such plateaus exist in the reading growth curve for each of the superior, high normal, average, low normal, and poor risk categories, a t test of significance was made on the difference of the means of the scores on the Stanford Achievement Test between each pair of consecutive grades.

Table XIII on page 65 shows the comparison of means between grades by readiness category on Paragraph Meaning and Table XIV on page 66 presents the comparison on Word Meaning. The computed t values for the comparisons made between grade three and grade four for each category of reading readiness were all found to be significant at better than the .01 level. Contrary to the findings of previous research, these results indicated that no plateau existed from the month of May in grade three to the month of May in grade four in the reading growth curve for each category of
### TABLE XIII

**COMPARISON OF MEANS BETWEEN GRADES BY READINESS CATEGORY ON PARAGRAPH MEANING OF THE STANFORD ACHIEVEMENT TEST**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grades Compared</th>
<th>t Value</th>
<th>df</th>
<th>t Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>Gr.4, Gr.3</td>
<td>4.878</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.5, Gr.4</td>
<td>6.332</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.6, Gr.5</td>
<td>3.458</td>
<td>59</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Gr.7, Gr.6</td>
<td>8.367</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td>High Normal</td>
<td>Gr.4, Gr.3</td>
<td>5.229</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.5, Gr.4</td>
<td>6.184</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.6, Gr.5</td>
<td>3.403</td>
<td>59</td>
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</tr>
<tr>
<td></td>
<td>Gr.7, Gr.6</td>
<td>8.851</td>
<td>59</td>
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</tr>
<tr>
<td>Average</td>
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</tr>
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<td>Gr.5, Gr.4</td>
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<td>59</td>
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<td>59</td>
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<td>6.661</td>
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<td>Gr.7, Gr.6</td>
<td>8.368</td>
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<td>Gr.7, Gr.6</td>
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<td>Grades Compared</td>
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<td>df</td>
<td>t Prob.</td>
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<td>--------------------</td>
<td>-----------------</td>
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<td>---------</td>
</tr>
<tr>
<td>Superior</td>
<td>Gr.4, Gr.3</td>
<td>4.370</td>
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</tr>
<tr>
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<td>10.146</td>
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<td>Gr.7, Gr.6</td>
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<td></td>
<td>Gr.5, Gr.4</td>
<td>7.776</td>
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</tr>
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<td>Gr.6, Gr.5</td>
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<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.7, Gr.6</td>
<td>8.776</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td>Average</td>
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<td>5.165</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.5, Gr.4</td>
<td>8.361</td>
<td>59</td>
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<td>Gr.6, Gr.5</td>
<td>5.784</td>
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<td>Gr.7, Gr.6</td>
<td>7.728</td>
<td>59</td>
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</tr>
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<tr>
<td></td>
<td>Gr.7, Gr.6</td>
<td>6.760</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
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<td>9.748</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>Gr.5, Gr.4</td>
<td>8.354</td>
<td>59</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
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<td>Gr.7, Gr.6</td>
<td>9.578</td>
<td>59</td>
<td>0.000</td>
</tr>
</tbody>
</table>
reading readiness. Perhaps the grade four reading program in the school district where this study was conducted has been carefully evaluated and provisions have been made to meet the needs of the pupils during this transition period from primary to intermediate grades.

The comparisons made between all other grades were also found to be significant. Figure 1 previously shown on page 60, however, reveals semi-plateaus in grades five to six on Paragraph Meaning for all categories of reading readiness except the low normal. There is a possibility that the growth rate in reading began to slow down because attention given to reading has decreased during this period. It is also possible that teachers were still developing literal comprehension and giving less emphasis on the handling of ideas in their teaching of reading.

The hypothesis that there is a plateau in grade four in the reading growth curve of each of the category of reading readiness was rejected.

IV. HYPOTHESIS 3

There are significant differences in the mean gains from grade three through grade seven among the groups in five categories of reading readiness.

The increments of the means of both sexes by readiness category on Paragraph Meaning and Word Meaning are
given in Table XV. These data reveal that there were differences in the amount of gains from grade three through grade seven among all categories of reading readiness.

Generally, the highest category yielded the greatest gain on both Paragraph Meaning and Word Meaning. The poor risk group, the lowest category, produced the smallest gain on Paragraph Meaning but on Word Meaning, the poor risk group yielded a slightly more but insignificant gain than the low normal group.

**TABLE XV**

**MEAN GAINS (K SCORES) IN THE STANFORD ACHIEVEMENT TEST OF BOTH SEXES**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grades 3-4</th>
<th>Grades 4-5</th>
<th>Grades 5-6</th>
<th>Grades 6-7</th>
<th>Grades 3-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>4.34</td>
<td>6.08</td>
<td>2.99</td>
<td>7.17</td>
<td>20.58</td>
</tr>
<tr>
<td>High Normal</td>
<td>4.01</td>
<td>5.18</td>
<td>2.83</td>
<td>6.93</td>
<td>18.95</td>
</tr>
<tr>
<td>Average</td>
<td>3.31</td>
<td>4.65</td>
<td>2.57</td>
<td>6.43</td>
<td>16.96</td>
</tr>
<tr>
<td>Low Normal</td>
<td>2.58</td>
<td>3.81</td>
<td>3.57</td>
<td>6.23</td>
<td>16.19</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>2.23</td>
<td>4.72</td>
<td>2.19</td>
<td>5.57</td>
<td>14.71</td>
</tr>
</tbody>
</table>

(Paragraph Meaning)

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grades 3-4</th>
<th>Grades 4-5</th>
<th>Grades 5-6</th>
<th>Grades 6-7</th>
<th>Grades 3-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>3.24</td>
<td>9.16</td>
<td>6.58</td>
<td>10.50</td>
<td>29.48</td>
</tr>
<tr>
<td>High Normal</td>
<td>3.15</td>
<td>5.80</td>
<td>4.69</td>
<td>8.78</td>
<td>22.42</td>
</tr>
<tr>
<td>Average</td>
<td>2.67</td>
<td>5.02</td>
<td>4.73</td>
<td>7.21</td>
<td>19.63</td>
</tr>
<tr>
<td>Low Normal</td>
<td>3.00</td>
<td>3.23</td>
<td>4.01</td>
<td>6.16</td>
<td>16.40</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>3.24</td>
<td>4.25</td>
<td>2.72</td>
<td>6.76</td>
<td>16.97</td>
</tr>
</tbody>
</table>

(Word Meaning)
The tests of significance made on the total mean gains from grade three through grade seven for the total group of subjects gave the data found in Table XVI. The differences between mean gains of almost all pairs of reading readiness categories compared were significant beyond the .05 level. Only the comparison between the low normal and poor risk groups on both Paragraph Meaning and Word Meaning failed to reach significance at the .05 level.

**TABLE XVI**

COMPARISON OF MEAN GAINS FROM GRADE 3 TO GRADE 7 BETWEEN READING READINESS CATEGORIES OF BOTH SEXES

<table>
<thead>
<tr>
<th>Reading Readiness Categories Compared</th>
<th>df</th>
<th>Paragraph Meaning</th>
<th>Word Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>t</td>
<td>t</td>
</tr>
<tr>
<td>Superior, High Normal</td>
<td>118</td>
<td>5.471</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Average</td>
<td>118</td>
<td>8.332</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Low Normal</td>
<td>118</td>
<td>10.985</td>
<td>.000</td>
</tr>
<tr>
<td>Superior, Poor Risk</td>
<td>118</td>
<td>10.627</td>
<td>.000</td>
</tr>
<tr>
<td>High Normal, Average</td>
<td>118</td>
<td>2.729</td>
<td>.007</td>
</tr>
<tr>
<td>High Normal, Low Normal</td>
<td>118</td>
<td>4.876</td>
<td>.000</td>
</tr>
<tr>
<td>High Normal, Poor Risk</td>
<td>118</td>
<td>5.030</td>
<td>.000</td>
</tr>
<tr>
<td>Average, Low Normal</td>
<td>118</td>
<td>1.940</td>
<td>.052</td>
</tr>
<tr>
<td>Average, Poor Risk</td>
<td>118</td>
<td>2.373</td>
<td>.018</td>
</tr>
<tr>
<td>Low Normal, Poor Risk</td>
<td>118</td>
<td>-0.709</td>
<td>.486*</td>
</tr>
</tbody>
</table>

* not significant
Figure 3 and Figure 4 on page 71 give a clearer picture of the increments. The curves of the mean gains of the five categories of reading readiness differ somewhat in detail but the general trend is similar, with the exception of the curve for the low normal group. The curves for the superior, high normal, average, and poor risk categories, show a rhythmical trend. It is a rhythm of an increase in increments from grade four to grade five followed by a decline from grade five to grade six, and a rapid increase from grade six to grade seven. The curve of the increments for the low normal group shows a gradual increase from grade three through grade seven on Word Meaning. However, on Paragraph Meaning, there is a slight decrease from grade five to grade six followed by a rapid increase in grade seven.

The children's rapidly expanding curriculum and interests have possibly contributed to the decrease in the mean gain in Paragraph Meaning from grade five to grade six. Many unfamiliar words they have met in such subjects as science and social studies might have caused difficulty in comprehension at this level because they probably have not yet developed independent reading habits and skills. There should be provisions in the reading program for a continuous development of skills appropriate to the kind of reading tasks the children are expected to perform at each rung of the educational ladder.
Figure 3. Mean Gains (K-Scores) on Paragraph Meaning.

Figure 4. Mean Gains (K-Scores) on Word Meaning.
It is also possible that many of the teachers who had instructed the children in this study had limited training in developmental reading and made few attempts to diagnose the reading difficulties of these grade five and six pupils. An unbalanced reading program with more emphasis on teaching reading as a mechanical process rather than as a tool for better understanding and interpretation in content areas also might have been responsible for the pupils' failure to maintain rapid growth in reading comprehension.

By the time the pupils were in grade seven many would have mastered the mechanics of reading fairly well, which would have enabled them to read more effectively during this period of rapid growth in comprehension, speed and reading interest.

Except for the comparison between the low normal and poor risk groups, it may be stated with reasonable confidence, that in general, there were significant differences in the mean gains from grade three through grade seven for the group in each of the categories of reading readiness.

V. HYPOTHESIS 4

There are significant sex differences in the reading growth pattern of the five categories of reading readiness.
From Table VII and Table VIII previously given on pages 51 and 52, it was shown that there were significant sex differences at the .05 level. A comparison of the means in Paragraph Meaning and Word Meaning separately by readiness category between the boys and the girls would show more clearly where the differences exist and the extent of such differences.

The mean K scores of the boys and the girls in the superior, high normal, average, low normal, and poor risk groups are given in Table XVII and Table XVIII. A comparison

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>82.29</td>
<td>88.01</td>
<td>94.71</td>
<td>96.19</td>
<td>103.56</td>
</tr>
<tr>
<td>High Normal</td>
<td>78.46</td>
<td>83.81</td>
<td>89.18</td>
<td>91.66</td>
<td>99.82</td>
</tr>
<tr>
<td>Average</td>
<td>75.66</td>
<td>78.55</td>
<td>83.38</td>
<td>86.42</td>
<td>92.88</td>
</tr>
<tr>
<td>Low Normal</td>
<td>75.34</td>
<td>78.03</td>
<td>82.55</td>
<td>86.45</td>
<td>93.23</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>75.11</td>
<td>76.53</td>
<td>82.41</td>
<td>84.38</td>
<td>90.62</td>
</tr>
<tr>
<td>b. Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>82.19</td>
<td>85.15</td>
<td>90.62</td>
<td>95.11</td>
<td>102.08</td>
</tr>
<tr>
<td>High Normal</td>
<td>76.84</td>
<td>79.50</td>
<td>84.51</td>
<td>87.69</td>
<td>93.39</td>
</tr>
<tr>
<td>Average</td>
<td>76.68</td>
<td>80.41</td>
<td>84.89</td>
<td>86.97</td>
<td>93.39</td>
</tr>
<tr>
<td>Low Normal</td>
<td>75.36</td>
<td>77.83</td>
<td>80.92</td>
<td>84.18</td>
<td>89.86</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>75.31</td>
<td>78.36</td>
<td>81.92</td>
<td>84.32</td>
<td>89.23</td>
</tr>
</tbody>
</table>
### TABLE XVIII
**MEAN K SCORES BY GRADE ON PARAGRAPH MEANING IN THE STANFORD ACHIEVEMENT TEST IN THE SUPERIOR, HIGH NORMAL, AVERAGE, LOW NORMAL, AND POOR RISK CATEGORIES OF READING READINESS**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grade 3</th>
<th>Grade 4</th>
<th>Grade 5</th>
<th>Grade 6</th>
<th>Grade 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>a. Boys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>75.57</td>
<td>78.40</td>
<td>89.06</td>
<td>96.98</td>
<td>105.90</td>
</tr>
<tr>
<td>High Normal</td>
<td>73.19</td>
<td>76.13</td>
<td>83.53</td>
<td>89.55</td>
<td>98.95</td>
</tr>
<tr>
<td>Average</td>
<td>69.62</td>
<td>72.42</td>
<td>78.08</td>
<td>82.46</td>
<td>90.46</td>
</tr>
<tr>
<td>Low Normal</td>
<td>71.00</td>
<td>73.65</td>
<td>77.70</td>
<td>82.07</td>
<td>89.32</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>69.37</td>
<td>72.00</td>
<td>77.22</td>
<td>80.08</td>
<td>88.00</td>
</tr>
<tr>
<td><strong>b. Girls</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>74.51</td>
<td>78.15</td>
<td>85.82</td>
<td>91.07</td>
<td>103.15</td>
</tr>
<tr>
<td>High Normal</td>
<td>71.52</td>
<td>74.86</td>
<td>79.06</td>
<td>82.42</td>
<td>90.58</td>
</tr>
<tr>
<td>Average</td>
<td>71.62</td>
<td>74.17</td>
<td>78.54</td>
<td>83.62</td>
<td>90.05</td>
</tr>
<tr>
<td>Low Normal</td>
<td>69.58</td>
<td>72.93</td>
<td>75.34</td>
<td>78.98</td>
<td>84.06</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>68.99</td>
<td>72.85</td>
<td>76.12</td>
<td>78.70</td>
<td>84.32</td>
</tr>
</tbody>
</table>

of these means is shown in Table XIX on page 75.

Sex differences in reading achievement growth are best depicted by comparing the growth curves of boys and girls separately by reading readiness category. Figures 5 to 9 show these comparisons on Paragraph Meaning. In the superior, high normal, and low normal groups, the boys surpassed the girls at all grade levels. The difference between the boys and the girls in the superior group was greatest in grade five which was significant at the .04 level. This was followed by a decreasing rate of growth.
TABLE XIX
COMPARISON OF MEANS BETWEEN BOYS AND GIRLS BY READINESS CATEGORY AND BY GRADE ON PARAGRAPH MEANING AND WORD MEANING OF THE STANFORD ACHIEVEMENT TEST

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Grades Compared</th>
<th>Paragraph Meaning</th>
<th>Word Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>df</td>
<td>t-value</td>
<td>t-probability</td>
</tr>
<tr>
<td>Superior</td>
<td>3</td>
<td>54</td>
<td>-0.065</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>56</td>
<td>-1.555</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>56</td>
<td>-2.060</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>55</td>
<td>-0.571</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>52</td>
<td>-0.661</td>
</tr>
<tr>
<td>High Normal</td>
<td>3</td>
<td>49</td>
<td>-1.505</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>48</td>
<td>-2.719</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>53</td>
<td>-2.674</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>56</td>
<td>-2.271</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>54</td>
<td>-3.131</td>
</tr>
<tr>
<td>Average</td>
<td>3</td>
<td>56</td>
<td>1.195</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>55</td>
<td>1.150</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>54</td>
<td>0.885</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>56</td>
<td>0.359</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>56</td>
<td>0.249</td>
</tr>
<tr>
<td>Low Normal</td>
<td>3</td>
<td>56</td>
<td>0.026</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>56</td>
<td>-0.170</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>54</td>
<td>-1.351</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>56</td>
<td>-1.768</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>56</td>
<td>-1.861</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>3</td>
<td>54</td>
<td>0.214</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>52</td>
<td>1.541</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>56</td>
<td>-0.292</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>54</td>
<td>-0.038</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>55</td>
<td>-0.716</td>
</tr>
</tbody>
</table>

* significant
Figure 5. Comparison of boys and girls in the superior group on Paragraph Meaning.
Figure 6. Comparison of boys and girls in the high normal group on Paragraph Meaning.
Figure 7. Comparison of boys and girls in the average group on Paragraph Meaning.
Figure 8. Comparison of boys and girls in the low normal group on Paragraph Meaning.
Figure 9. Comparison of boys and girls in the poor risk group on Paragraph Meaning.
for the boys, thus bringing the two sexes closer together in grade six and grade seven.

There was a marked sex difference in the high normal group. The boys exhibited a more rapid rate of growth than the girls. The differences in grades four through seven were found to be significant at better than the .05 level.

The growth patterns for the two average groups are so similar that sex differences can be disregarded. Here the boys fell below the girls. There was a slackening of growth from grade five through grade six. No significant differences between the sexes were found in the low normal group.

The girls in the poor risk group showed a constant rate of development, the curve approximating a straight line. The curve for the boys in this group is somewhat irregular falling below the girls in grade three and grade four, exceeding the girls in grade five, falling below again in grade six and going up again in grade seven. No significant differences, however, were found between the boys and the girls in the poor risk group.

The comparisons between the boys and girls on Word Meaning are shown in Figures 10 to 14. The means of the boys were consistently higher than the means of the girls from grade three through grade seven in the superior, high normal, and low normal categories. The differences were found to be significant at better than the .05 level only
Figure 10. Comparison of boys and girls in the superior group on Word Meaning.
Figure 11. Comparison of boys and girls in the high normal group on Word Meaning.
Figure 12. Comparison of boys and girls in the average group on Word Meaning.
Figure 13. Comparison of boys and girls in the low normal group on Word Meaning.
Figure 14. Comparison of boys and girls in the poor risk group on Word Meaning.
in grade six in the superior group, in grade three in the average group, and in grades five, six and seven in the low normal group. The differences were significant at all grades except grade four in the high normal group. In the poor risk group, the boys' means were also higher than the girls' means for all grades except in grade four. However, in the average group, the boys fell below the girls from grade three to grade six and went slightly higher than the girls in grade seven. The extent of the difference between the two sexes appeared to become bigger from grade five to grade seven for all categories of reading readiness with the exception of the average group.

The degree of significance of the differences between the slopes of the curves of the boys and the girls has been determined statistically. The results of these comparisons are shown in Table XX.

**TABLE XX**

**COMPARISON OF SLOPES BETWEEN BOYS AND GIRLS BY READINESS CATEGORY**

<table>
<thead>
<tr>
<th>Readiness Category</th>
<th>Paragraph Meaning t-Value</th>
<th>Paragraph Meaning t-Prob.</th>
<th>Word Meaning t-Value</th>
<th>Word Meaning t-Prob.</th>
<th>df</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superior</td>
<td>0.162</td>
<td>.875*</td>
<td>5.562</td>
<td>.000</td>
<td>58</td>
</tr>
<tr>
<td>High Normal</td>
<td>2.324</td>
<td>.023</td>
<td>10.363</td>
<td>.000</td>
<td>58</td>
</tr>
<tr>
<td>Average</td>
<td>1.218</td>
<td>.228*</td>
<td>3.134</td>
<td>.006</td>
<td>58</td>
</tr>
<tr>
<td>Low Normal</td>
<td>0.698</td>
<td>.510*</td>
<td>5.329</td>
<td>.000</td>
<td>58</td>
</tr>
<tr>
<td>Poor Risk</td>
<td>2.609</td>
<td>.018</td>
<td>4.788</td>
<td>.000</td>
<td>58</td>
</tr>
</tbody>
</table>

*not significant*
As explained previously on page 58 the significant probabilities might have resulted from forcing linearity on curvilinear data. Figures 15 to 18 reveal curvatures in the trend of the means of the boys and the girls for all categories of reading readiness.

VI. HYPOTHESIS 5

There are some outstanding early childhood physical, intellectual, social, and emotional characteristics that distinguish those who have become good and poor readers in grade five.

Information on the early childhood characteristics of the subjects selected for this second part of the investigation was obtained by the investigator from the school permanent record cards, from subtest results of the Metropolitan Readiness Tests, and from parent interviews. A letter explaining the purpose of the study and requesting permission to conduct the interview was sent to the parents of each child included in the sample. The interviewees were requested to select the time most convenient for them. Information was elicited by the interviewer through informal conversation with both parents in three cases, with the

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3 See Appendix B, pp. 128-132.
Figure 15. Trend of means on Paragraph Meaning of boys in the five levels of reading readiness.
Figure 16. Trend of means on Paragraph Meaning of girls in the five levels of reading readiness.
Figure 17. Trend of means on Word Meaning of boys in the five levels of reading readiness.
Figure 18. Trend of means on Word Meaning of girls in the five levels of reading readiness.
fathers in two cases, and with the mothers in twenty-seven cases. The investigator wanted to include information about occupation and educational level of parents since these could color the whole set of replies elicited during the interview. Local School Board restrictions, however, prevented the inclusion of questions related to these data in the interview guide.

The description of the characteristics in preschool and early school years of sixteen good readers and sixteen poor readers in the fifth grade is presented in the form of case studies. The information from each case study has been summarized under a number of categories for ease of analysis of data.

**Summary of the Data on the Case Studies**

The data from the case studies have been summarized to uncover certain traits in early childhood common among good readers and also those characteristics relating to poor readers in the fifth grade. The summary follows closely the presentation of the information by major headings done in the description of the case studies.

Since the sample size was small (N = 32) and most of the tables were with a single degree of freedom, the use of chi-square tests on these data was ruled out. The results

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4See Appendix C, pp. 133-174.
of chi-square tests on tables with more than one degree of freedom would also have been meaningless because more than 20 per cent of the cells had expected frequencies of less than 5. There were also some cells with expected frequencies of less than 1.

The Fisher exact probability test was used in determining the significance of the proportions of good and poor readers possessing the characteristics studied. All the categorizations were dichotomized and the dotted lines in the summary of the data indicate where the division was made.

Those children six years of age and over were put together because they are generally considered to be mature enough for school work.

The pupils with average readiness category were classified as likely to succeed in first-grade work so they were grouped with those in the high normal and superior categories. The same division was done with all the traits taken from the subtest scores on the Metropolitan Readiness Tests.

The first-borns were joined with "only children" because they were generally treated as "only children" before the rest of the children in the family were born.

The display of energy characteristic was dichotomized as indicated because it was assumed that children with
more than average energy are physically well and could be better learners than those with just average or less energy.

<table>
<thead>
<tr>
<th>Good Reader</th>
<th>Poor Reader</th>
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<td>Physical Characteristics</td>
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<td>--------------------------</td>
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<td></td>
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<td>*Visual perception</td>
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<td>Average</td>
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<td>Poor</td>
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<td>*Auditory perception</td>
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<td>Low</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
</tr>
<tr>
<td>*Motor control</td>
<td></td>
</tr>
<tr>
<td>Superior</td>
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</tr>
<tr>
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<td>3</td>
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</tr>
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<td>Low</td>
<td>3</td>
</tr>
<tr>
<td>Poor</td>
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</tr>
<tr>
<td>Display of energy</td>
<td></td>
</tr>
<tr>
<td>when playing</td>
<td></td>
</tr>
<tr>
<td>More than average</td>
<td>2</td>
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<tr>
<td>Average</td>
<td>4</td>
</tr>
<tr>
<td>Less than average</td>
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*From subtests scores on the Metropolitan Readiness Tests.*
<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td>Intellectual characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participated in conversation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Curious, asked questions, explored new things</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Displayed interest in reading</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>*Richness of verbal concept</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>High</td>
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<td>6</td>
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<tr>
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<td>Low</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>*Number knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>High</td>
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<td>4</td>
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<td>Average</td>
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<tr>
<td>Low</td>
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<tr>
<td>Poor</td>
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*From subtests scores on the Metropolitan Readiness Tests.
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<thead>
<tr>
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<th>Good Reader</th>
<th>Poor Reader</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td><em>Vocabulary</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superior</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>High</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Average</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Low</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poor</td>
<td>0</td>
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Social characteristics

<table>
<thead>
<tr>
<th>Enjoyed being with others</th>
<th>Good Reader</th>
<th>Poor Reader</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td>Yes</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>4</td>
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<table>
<thead>
<tr>
<th>Liked teachers</th>
<th>Good Reader</th>
<th>Poor Reader</th>
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<tr>
<td>Yes</td>
<td>7</td>
<td>7</td>
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<tr>
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<td>1</td>
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<table>
<thead>
<tr>
<th>Shared toys and games</th>
<th>Good Reader</th>
<th>Poor Reader</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>4</td>
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<table>
<thead>
<tr>
<th>Harmonious, not shy</th>
<th>Good Reader</th>
<th>Poor Reader</th>
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<tbody>
<tr>
<td>Yes</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>5</td>
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<table>
<thead>
<tr>
<th>Emotional characteristics</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Congenial relationship with parents</td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td>Yes</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>2</td>
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*From subtests scores on the Metropolitan Readiness Tests.
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<th>Good Reader</th>
<th></th>
<th>Poor Reader</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Boy</td>
<td>Girl</td>
<td>Total</td>
<td>Boy</td>
</tr>
<tr>
<td>Congenial relationship</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>with teacher and</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>schoolmates</td>
<td></td>
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<td>No</td>
<td>3</td>
<td>3</td>
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<td>5</td>
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<td>Had self-confidence</td>
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<td>4</td>
<td>4</td>
<td>8</td>
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<tr>
<td>Had the ability to</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>concentrate</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>2</td>
<td>6</td>
<td>3</td>
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<tr>
<td>No</td>
<td>4</td>
<td>6</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Overdependent</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0</td>
<td>0</td>
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<td>1</td>
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<tr>
<td>No</td>
<td>8</td>
<td>8</td>
<td>16</td>
<td>7</td>
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</table>

Experiential background

<p>|                                | Good Reader |            | Poor Reader |            |
|                                | Boy | Girl | Total | Boy | Girl | Total |
|                                |     |       |       |     |       |       |
| Travelled outside Province     |     |       |       |     |       |       |
| Yes                            | 5   | 4     | 9      | 6   | 4     | 10    |
| No                             | 3   | 4     | 7      | 2   | 4     | 6     |
| Went on outings with           |     |       |       |     |       |       |
| family or friends              |     |       |       |     |       |       |
| 1 or more times/week           | 5   | 3     | 8      | 4   | 4     | 8     |
| Less often than once a week    | 3   | 5     | 8      | 4   | 4     | 8     |
| Was read to                    |     |       |       |     |       |       |
| 1 or more times/week           | 4   | 3     | 7      | 1   | 1     | 2     |
| Less often than once a week    | 4   | 5     | 9      | 7   | 7     | 14    |</p>
<table>
<thead>
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<th>Characteristic</th>
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<tbody>
<tr>
<td></td>
<td>Boy</td>
<td>Girl</td>
</tr>
<tr>
<td>Was told stories to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 or more times/week</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Less often than once a week</td>
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<td>4</td>
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<tr>
<td>Was given help in reading</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>Watched television</td>
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</tr>
<tr>
<td>15 or fewer hours a week</td>
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**Findings from the Case Studies**

The probability for each trait obtained by using the Fisher exact probability test was listed under the main headings.

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<th>Probability</th>
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<tbody>
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<tr>
<td>Number of children in the family</td>
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<tr>
<td>Position in the family</td>
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<td>Characteristics</td>
<td>Probability</td>
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<td><strong>Physical characteristics</strong></td>
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<td>Visual perception</td>
<td>.049*</td>
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<tr>
<td>Auditory perception</td>
<td>.001*</td>
</tr>
<tr>
<td>Motor control</td>
<td>.277</td>
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<tr>
<td>Display of energy while playing</td>
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<tr>
<td><strong>Intellectual characteristics</strong></td>
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<tr>
<td>Participated in conversation</td>
<td>.162</td>
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<tr>
<td>Eager to do things by himself</td>
<td>.000*</td>
</tr>
<tr>
<td>Curious, asked questions</td>
<td>.000*</td>
</tr>
<tr>
<td>Displayed interest in reading</td>
<td>.000*</td>
</tr>
<tr>
<td>Richness of verbal concept</td>
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<td>Number knowledge</td>
<td>.024*</td>
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<td>Vocabulary</td>
<td>.022*</td>
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<td><strong>Social characteristics</strong></td>
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<td>Enjoyed being with others</td>
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<tr>
<td>Liked teachers</td>
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<td>Harmonious</td>
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<td>.005*</td>
</tr>
<tr>
<td>Congenial relationship with teacher and schoolmates</td>
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<td>Characteristics</td>
<td>Probability</td>
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<td>---------------------------------------</td>
<td>-------------</td>
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<tr>
<td>Had self confidence</td>
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<tr>
<td>Had the ability to concentrate</td>
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<tr>
<td>Overdependent</td>
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**Experiential background**

<table>
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<tbody>
<tr>
<td>Travelled outside Province</td>
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<tr>
<td>Went on outings with family or friends</td>
<td>.276</td>
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<tr>
<td>Was read to</td>
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</tr>
<tr>
<td>Was told stories to</td>
<td>.219</td>
</tr>
<tr>
<td>Was given help in reading</td>
<td>.050*</td>
</tr>
<tr>
<td>Watched television</td>
<td>.271</td>
</tr>
</tbody>
</table>

*significant

**Background information.** There were eight children in the poor readers' group and seven in the good readers' group who entered school below 5 years and 9 months. The number of children with school entrance ages above 6 years was larger among poor readers than among good readers (7 vs. 3). This indicates that school entrance age probably does not affect success in reading in the intermediate grades.

None of the poor readers belonged to the superior category of readiness and there were only two poor readers with high normal initial readiness status. Among the good
readers there was one in the superior group and seven in the high normal category of readiness. Only one good reader started with a low normal readiness level while eight poor readers were in the lower levels of readiness. The probability calculated on these data is .007. This implies that initial reading readiness may be a factor that distinguishes good readers from poor readers at the fifth grade level.

Since an almost equal number of good and poor readers (4 and 5, respectively) was found speaking two languages, it can not be inferred in this study that bilingualism affects reading success in the intermediate grades. The language spoken at home, the number of children in the family and the position in the family fell short of the 5 per cent level of significance.

**Physical characteristics.** Visual perception (p = .049) and auditory perception (p = .001) as determined by the initial readiness test distinguished significantly the good readers from the poor readers. The exact probability test performed on motor control and display of energy while playing failed to reach the 5 per cent level of significance.

**Intellectual characteristics.** The parent interview data showed marked differences between good and poor readers in three traits under this heading. They were eagerness to
do things by himself, curiosity, and display of interest in reading. With probabilities of .000 these characteristics differentiated significantly between good and poor readers in the fifth grade. Also, richness of verbal concept \( (p = .022) \), number knowledge \( (p = .024) \), and vocabulary \( (p = .022) \) as assessed by the Metropolitan Readiness Tests distinguished significantly the good from the poor grade five readers.

Social characteristics. The good and poor readers were found to be very similar in relation to the social characteristics selected for this study. The Fisher exact probability test did not reveal any significant difference between the frequencies obtained for the good and the poor readers' groups.

Emotional characteristics. Among the emotional characteristics investigated during the parent interviews two showed significant differences between the good and the poor readers. Good readers tend to be more congenial at home \( (p = .005) \). A probability of .006 implies that self-confidence in preschool and early school years is a trait which distinguishes good from poor readers in later elementary grades. Good concentration ability, a feeling of security in school, and independence developed early in the formative years did not reach the 5 per cent level of significance.
Experiential background. The amount of travel and television viewing and the number of outings with family and/or friends failed to show any distinction between good and poor readers. There were almost as many good readers as there were poor readers who had been told stories before they went to school and during the beginning school years. Four of the good readers and none among the poor readers were given preschool help in reading. Exact probability computed on these data showed significant difference at the 5 per cent level.

All the good readers except one were read to by their mothers or by their older brothers or sisters during their early childhood days. Six of the poor readers were never read to before they went to school. Only two of the poor readers were read to once a week and eight were read to less often. The Fisher exact probability test on these data yielded a probability significant at the .049 level.
CHAPTER V

SUMMARY, CONCLUSIONS AND IMPLICATIONS

The discussion in this chapter has been divided into four sections: (1) the summary of the design and procedures, (2) the summary of findings, (3) educational implications, and (4) suggestions for further research.

I. SUMMARY OF DESIGN AND PROCEDURES

The aim of the first part of this study was to investigate, in retrospect, the growth patterns in reading achievement of a group of grade seven children who started schooling with different levels of reading readiness. Growth in reading was defined as the measured gain in reading achievement from year to year.

The procedure consisted in gathering continuous records of the results on the Paragraph Meaning and Word Meaning subtests of the Stanford Achievement Test given to the same children at yearly intervals for a period of five years, from grade three through grade seven. The curves of growth in reading for each group of children in the superior, high normal, average, low normal, and poor risk categories of reading readiness were based on the K-scores derived from the pupils' actual scores. The findings and conclusions of this part of the study were based on statis-
tical and graphical comparisons of the trend of the means exhibited by each of the groups in the five levels of reading readiness. Analysis of variance and the t test of significance were employed in the statistical treatment of the data.

The purpose of the second part of the study was to identify certain preschool and beginning school characteristics that distinguish those who have become good and poor readers in grade five. To do this, case studies were made on sixteen good readers and sixteen poor readers selected from the top 27 per cent and the bottom 27 per cent of a population of 315 grade five pupils from five elementary schools. The objectively measured characteristics of good and poor readers were obtained from the results of the Metropolitan Readiness Tests and other significant data recorded in the school permanent record cards. Other pertinent information was obtained by means of interview with parents of each of the sixteen good and sixteen poor readers.

Statistical analysis of the data was done by applying the Fisher exact probability test. The computed probability showed which of the early childhood characteristics selected for the study significantly differentiated the good readers from the poor readers in the grade five level.
II. SUMMARY OF FINDINGS

Growth Patterns in Reading Achievement

A thorough examination of the trend of the mean scores on the Paragraph Meaning and Word Meaning subtests of the Stanford Achievement Test exhibited by groups of children in grade seven with different initial reading readiness status has led to the following conclusions:

1. The three highest groups, the superior, high normal, and average maintained their relative positions throughout the entire five-year period. This trend indicated that pupils with high levels of reading readiness at the beginning of their formal reading experience continued to perform well in reading throughout the elementary grades.

2. Those with superior initial reading readiness status remained superior, on the average, and even tended to progress at a faster rate than the other categories of reading readiness.

3. The slopes of the curves on Paragraph Meaning of the average and the low normal groups and on Word Meaning of the low normal and the poor risk groups tended to be similar.

4. There appeared to be no plateau in grade four in the growth curves of all levels of reading readiness but something like a plateau was noted from grade 5 through grade 6.
5. There was a steep rise in growth in reading in grade seven for all the five categories of reading readiness.

6. The mean gains from grade three through grade seven were significantly different for all the reading readiness groups. The superior group yielded the greatest gain on both Paragraph Meaning and Word Meaning. The poor risk group had the smallest gain on Paragraph Meaning but exceeded the low normal group on Word Meaning by .57 K-score points.

7. In general, the boys surpassed the girls at all grade levels. The differences, however, were found to be significant in most grades only for the high normal category on Paragraph Meaning and for the high normal and low normal categories on Word Meaning.

It is possible that the use of more masculine-oriented materials in the elementary grades in the schools where the investigation was conducted might have contributed to the better performance in reading by the boys.

Characteristics of Good and Poor Readers

Conclusions derived from the findings of the investigation on the early childhood characteristics of good and poor readers in grade five were summarized as follows:
1. Good readers in grade five generally had higher initial reading readiness status as measured by the Metropolitan Readiness Tests in kindergarten.

2. More grade five good readers were eager to do things by themselves and they were more self-confident and independent during their early childhood days than were poor readers.

3. Good readers in grade five, in contrast to poor readers, were generally curious about their environment during their preschool and beginning school years. They usually asked a lot of questions and demanded explanation for almost anything.

4. More good readers in grade five displayed preschool interest in reading than did the poor readers. They often requested that stories be told or read to them and enjoyed picture books and magazines.

5. More good readers than poor readers in grade five were emotionally well adjusted at home during their preschool and early school years. Good readers tended to be more congenial at home during these years.

6. More good readers than poor readers in grade five were read to and given help in reading during their early childhood days.

7. School entrance age did not differentiate significantly between good and poor readers in grade five.
Good readers and poor readers were found to be similar in relation to language spoken at home, number of children in the family, and position in the family.

8. The skills and abilities measured by the subtests of the Metropolitan Readiness Tests that were found to be useful as predictors of reading achievement at the fifth grade were richness of verbal concept, auditory perception, vocabulary, visual perception, and number knowledge. Only subtest 6, Copying, which measures motor control, failed to reach significance at the 5 per cent level.

III. EDUCATIONAL IMPLICATIONS

This study has shown that the child's readiness for reading should be of great concern to parents, teachers, and administrators. Parents should be aware of the effect the early environment of the child has on his later reading patterns. Long before a child goes to school parents should stimulate reading readiness by providing various experiences at home. They should expand the child's preschool experiences by supporting his curiosity by answering patiently and promptly his queries. They should encourage the child to do things for himself, to explore and discover new experiences, and to solve his own problems. They should foster the child's love for reading by telling or reading well-selected and appealing stories to him.
Children come to kindergarten and first grade with different reading potentials and readiness for reading. The teacher should be able to observe evidences of readiness for reading in each child in her class to guide her in her teaching. Teachers should make use of the results of readiness tests. This could be supplemented by other information obtained from parents. It is ideal to introduce a child to the reading process at the time when his desire to read is strong and when he is ready to read. But reading readiness is not something to be waited for. It can be developed through providing the children with a variety of experiences such as letting them talk about their personal experiences or retell stories read or told to them. Teachers can arouse in children a desire to read by making picture books, story books and other reading materials available to them.

The administrator should plan an effective readiness program. Harris surmised that "an effective readiness program should make use of readiness tests that can locate areas of weakness and should provide specific learning sequences in each area in which a weakness is found."¹ King contended that "a stimulating pre-reading program,

which includes literature, language, and specific visual and auditory training, will contribute directly to learning to read."\(^2\)

The administrator should see to it that the reading program provides for a systematic development of the reading skills appropriate to the kind of reading tasks the children will meet at each grade level from kindergarten to college. Special attention should be given to the period when the children's progress in reading begins to bog down. More emphasis should be placed on interpretation and understanding of what has been read rather than on mere word recognition in the preparation of the reading curriculum.

A good working relationship between administrator, teachers and parents is necessary in order that they can plan together on how to help the children grow into reading. There should be frequent conferences, especially with parents of preschool, kindergarten, and first grade pupils so that they could discuss the roles that each can play in laying a strong foundation for the children's reading growth.

IV. SUGGESTIONS FOR FURTHER RESEARCH

This study has brought to a focus a number of issues needing further research.

The findings of this study showed a consistent drop in the rate of reading growth at the fifth and sixth grade levels in all categories of reading readiness except the low normal group. An investigation of the factors that contributed to this drop in rate of reading growth is suggested.

A replication of the study on the early childhood characteristics that distinguished good from poor readers in the higher grades should be made using sources of information in addition to parents. The data might be gathered from kindergarten and first grade teachers' written observations and recollections, health records, cumulative records, and the results of readiness and other standardized tests administered to the children during their preschool and early school years. Other characteristics worth looking into are onset of language, age at which the child started to walk, education of parents, and home literary environment.

Since it is generally accepted that the foundations of reading are laid long before a child goes to school and that the parents are the child's first teachers, how would the attendance of parents in a parent education course be related to the child's readiness for reading and reading achievement? The answer to this question may ultimately lead to the need for parent education as a part of the
regular school program. An exploration into this possibility is currently relevant.

Would an early start in school, especially for those children who come from poor home environment, affect reading achievement in later years? Many preschool experiences were found to contribute to success in reading. Hence early schooling for children whose parents could not provide them with favorable conditions would be a suitable topic for research.

Kindergarten programs have been fostering social and emotional growth. Would an emphasis on cognitive growth in kindergarten result in better reading achievement in the elementary grades?

One limitation of the study on growth patterns was the fact that it was retrospective in nature and had to depend mostly on data available in schools. A longitudinal study of individual pupils deliberately planned to be followed up from kindergarten through grade seven using reliable research instruments may yield more comprehensive information and may reveal more reliable patterns of reading growth.
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D. UNPUBLISHED MATERIALS


APPENDICES
APPENDIX A

INTERVIEW GUIDE

I. Home and Family Background

Language spoken at home:

_____ Monolingual
_____ Bilingual
_____ Multilingual

Number of children in the family:

_____ Number of brothers
_____ Number of sisters

Position of child in the family:

_____ First
_____ Intermediate
_____ Last
_____ Only child

II. Physical Characteristics

When playing how much energy did the child have compared to children his age?

_____ definitely more than average
_____ above average
_____ definitely less than average

In what type of activities did the child do especially well?

_____ outdoor, active games
_____ indoor, quiet games

III. Intellectual Characteristics

Did your child participate in conversations?

_____ Yes
_____ No
Was he eager to do things by himself?

____ Yes
____ No

Was he curious?

____ Yes
____ No

Did your child show any preschool interest in learning to read?

____ Yes
____ No

IV. Social Characteristics

Did your child enjoy being with others?

____ Yes
____ No

Did he share his toys and games with others?

____ Yes
____ No

What was the child's behavior like before he started school?

____ got into quite a lot of trouble
____ shy
____ harmonious

Did your child attend kindergarten?  ____ Yes  ____ No

____ 1 year
____ 6 months
____ less than 6 months

Did he like his teacher in kindergarten?

____ Yes
____ No

Did he like his teacher in first grade?

____ Yes
____ No
V. Emotional Characteristics

How do you think your child and you got along with each other before he entered school?

- some trouble
- sometimes poor behavior
- no trouble at all

When your child first attended school did he say he wanted to stay home?

- Yes
- No
- Only in the beginning
- intermittently
- most of the time

Did your child feel self-confident?

- Yes
- No

How did the child react when he was engaged in some work or game?

- gave up easily
- sometimes he gave up, sometimes he didn't work to the end of the task

Was your child overdependent?

- Yes
- No

VI. Experiential Background

Did you travel anywhere outside Vancouver with your child before he started school?  

- Yes  
- No

If so, where did you go?  

How long did you stay there?  

Did you go on outings with your child before he started school?  

- Yes  
- No  

If so, how often?

- once a week
- once a month
- less often
Did you tell him stories before he started school?  
_____ Yes  _____ No  If so, how often?

_____ every day
_____ once a week
_____ less often

Did you or anybody else give the child preschool help with reading?  
_____ Yes  _____ No

Did the child watch television before starting school?  
_____ Yes  _____ No  If so, how often?

_____ 5 or fewer hours per week
_____ 6 to 15 hours per week
_____ 16 or more hours per week

What valuable learnings do you think your child acquired from watching television?  

_____ interest in written words
_____ vocabulary development
_____ information about history

Did you read to him before he started school?  _____ Yes  _____ No  If so, how often?

_____ every day
_____ two or three times a week
_____ less often

How did your child react when you told him or read him stories?  

_____ very interested
_____ slightly interested
_____ not interested
APPENDIX B

AN INTERVIEW WITH A PARENT.

The following is a sample interview with a parent. All names except the interviewer's are fictitious. The interviewee was the mother of a girl who had been classified as a good grade five reader based on her scores on the Gates-MacGinitie Reading Tests. The school records showed that she entered school at the age of 68 months. Her initial readiness status was average.

Interviewer (approaching the parent in a relaxed and friendly manner): Good evening, Mrs. Bell. I am Teresa Andrade. I phoned you about your daughter Ann.

Parent (knowing the purpose of the visit because of a letter sent in advance by the interviewer and a telephone call confirming the date and time of the interview): Come in, Miss Andrade. Have a seat.

Interviewer: Ann's school records show that she has been getting pretty good marks in reading since the first grade.

Parent: Oh, she sure loves to read. Reading is her favorite subject. There is hardly a day you can see her come home without any library book.

Interviewer: It is possible that many of Ann's characteristics during her early childhood days are related to her being a good reader now? Could you possibly look back and try to recall which ones?
Parent: Oh, well, let us see. What I remember fully well is that as a child she had been curious about written words on television. She would always ask what a word says till she could finally identify TV commercials. And she seemed to be very interested in the letters of the alphabet so that she knew already how to read and write them before she went to school.

Interviewer: Who taught her the letters of the alphabet?

Parent: I did. Because she seemed to be so interested in them I was encouraged to teach her.

Interviewer: You probably read or told her stories too.

Parent: Oh yes. She is an only child and I could give her the best attention and care. I did it almost every night before she went to bed.

Interviewer: And was she interested in them?

Parent: Yes, she was. She would even ask questions about them. She was a curious child and demanded explanation for everything. Sometimes she would even ask us what we had been doing when we were kids.

Interviewer: I hope you won't mind if I ask you how you and your child got along with each other before she went to school.
Parent: Oh, not at all. Sometimes Ann was mischievous but she was good on the average. She was a happy girl.

Interviewer: Could you possibly tell me how much energy Ann had when playing compared to other children her age?

Parent: I should say just average. She liked playing with the neighbors but she easily gave up. Although she could get along with others, she often times preferred playing alone.

Interviewer: Was she willing to share her toys with her playmates?

Parent: Yes, she did share her toys most of the time, especially with Shirley, her best friend. They are very good friends and Ann liked very much to go to kindergarten school with her.

Interviewer: Did she like her teachers in kindergarten and first grade?

Parent: She liked them, especially Miss Clarke, her sweet kindergarten teacher.

Interviewer: Do you speak any other language aside from English?

Parent: No.

Interviewer: Do you remember if Ann usually took part in conversations?
Parent: My, she was a good talker. She would talk with anybody who came to see us.

Interviewer: Was she eager to do things by herself?

Parent: Ann was independent as a small child. She had self-confidence. She never asked what should be done. She tried to do things by herself, but just like in playing she would give up before the task was done.

Interviewer: How often did Ann watch television before she went to school?

Parent: Not too much. I was afraid it would spoil her eyes so she spent only about an hour a day watching television.

Interviewer: Did you go on outings with her before she started school?

Parent: We went on outings almost every weekend and we still do it now.

Interviewer: It was nice talking to you and hearing about these interesting behaviors of Ann during her preschool days.

Parent: It was a pleasure to think back. It would really be interesting to find out whether what happened in the past is related to a child's achievement right now. I hope to hear about the
result of your study.

Interviewer: I will do that, Mrs. Bell. Thank you for giving me a part of your precious time.

Goodbye.
APPENDIX C

CASE STUDIES

The early childhood characteristics of thirty-two good and poor readers in grade five are described in the following case studies. Each case study has been numbered and a code used to identify each subject. In each code the first letter, G or P represented a good reader or a poor reader respectively, and the second letter, B or G represented "boy" or "girl" respectively. Thus, there were four coded groups, GB, GG, PB, and PG. The third symbol in each code was a numeral representing the number of the subject in each of the four groups.

The information relating to each case study has been written informally to suggest the flavor of the interview with the parents. The main headings in each case study were background information, physical characteristics, intellectual characteristics, social characteristics, emotional characteristics, and experiential background. Under each main heading are short statements describing traits or behaviors of the child during preschool and early school years as recalled by the parent(s) during the interviews and as gathered from school permanent record cards and records of the Metropolitan Readiness Tests. The following characteristics were based on the subtest results of the Metropolitan Readiness Tests:
Richness of verbal concept (involving comprehension of spoken words) — Test 1 - Word Meaning

Auditory perception (involving comprehension of spoken sentences) — Test 2 - Sentences

Vocabulary — Test 3 - Information

Visual perception — Test 4 - Matching

Number knowledge — Test 5 - Numbers

Motor control — Test 6 - Copying

Categorizations for Tests 1 to 4 and Test 6, which were not provided for in the manual, were done using the same proportions as indicated in the manual for the total readiness scores. Categorization for Test 5 was provided for in the manual.

<table>
<thead>
<tr>
<th>Categories</th>
<th>Tests 1 +4</th>
<th>Tests 2 + 3</th>
<th>Test 6</th>
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<tr>
<td>Superior</td>
<td>18-19</td>
<td>13-14</td>
<td>10</td>
</tr>
<tr>
<td>High Normal</td>
<td>15-17</td>
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</tr>
<tr>
<td>Average</td>
<td>12-14</td>
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<tr>
<td>Low Normal</td>
<td>8-11</td>
<td>6- 8</td>
<td>4-5</td>
</tr>
<tr>
<td>Poor</td>
<td>0- 7</td>
<td>0- 5</td>
<td>0-3</td>
</tr>
</tbody>
</table>
Case Study No. 1 GBl

Background information

School entrance age - 67 months
Readiness category - High Normal
Language spoken at home - monolingual (English)
Number of children in the family - 2
Position in the family - 1

Physical characteristics

Visual perception - High Normal
Auditory perception - Superior
Motor control - Low Normal
Display of energy when playing - more than average

Intellectual characteristics

Liked to converse with guests
Eager to explore
Asked a lot of questions
Interested in pictures
Memory - good
Richness of verbal concept - superior
Vocabulary - superior
Number knowledge - high normal

Social characteristics

Enjoyed the company of playmates
Shared toys with friends
Liked teachers in kindergarten and first grade
Harmonious

Emotional characteristics

Got along pretty well with parents
Liked school
Had self-confidence
Finished work begun
Experiential background

Travelled to the States
Frequently went on outings with family
Was read to every day
Was told stories once a week
Watched television for five or more hours per week

Case Study No. 2 GB2

Background information

School entrance age - 71 months
Readiness category - High Normal
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 1

Physical characteristics

Visual perception - superior
Auditory perception - average
Motor control - average
Display of energy when playing - average

Intellectual characteristics

A good conversationalist
Eager to explore
Curious
Liked books very much
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - average

Social characteristics

Enjoyed playing with others
Shared games and toys
Liked teachers
Harmonious
Emotional characteristics

Sometimes got into trouble at home
Congenial in school
Independent
Gave up work easily

Experiential background

Went to the zoo and the museum
Listened to stories told almost every day
Was read to every day
Watched television from six to fifteen hours a week

Case Study No. 3  GB3

Background information

School entrance age - 67 months
Readiness category - High Normal
Language spoken at home - bilingual (English and German)
Number of children in the family - 6
Position in the family - 6

Physical characteristics

Visual perception - superior
Auditory perception - high normal
Motor control - high normal
Display of energy when playing - average

Intellectual characteristics

Answered questions asked
Wanted to try new things
Wanted to know almost everything
Requested parents to read to him often
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - high normal
Social characteristics

Liked teachers
Enjoyed the company of sisters and brother
Friendly

Emotional characteristics

Had no trouble at all at home
Liked school
Worked till end of tasks

Experiential background

Travelled to the Prairies
Went fishing with friends and family
Went to library with members of the family who all love to read
Did not watch television in preschool days because the family had no television set at that time
Was read to two or three times a week
Was told stories every day

Case Study No. 4 GB4

Background information

School entrance age - 67 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 6
Position in the family - 6

Physical characteristics

Visual perception - average
Auditory perception - average
Motor control - high normal
Display of energy when playing - average
Intellectual characteristics

Always ready to talk about anything
Eager for new experiences
Demanded explanation
Did not show preschool interest in learning to read
Richness of verbal concept - high normal
Vocabulary - high normal
Number knowledge - average

Social characteristics

Harmonious
Liked teachers
Joined quiet games such as checkers and building blocks

Emotional characteristics

Got along well with the family
Cried in school only in the beginning
Was not interested in first grade

Experiential background

Seldom went on outings with family
Was not given help in reading at home
Was read to less often than once a week

Case Study No. 5  GB5

Background information

School entrance age - 67 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 5
Position in the family - 2
Physical characteristics

Visual perception - average
Auditory perception - superior
Motor control - low normal
Display of energy when playing - less than average

Intellectual characteristics

Curious, asked why things happen
Solved his own problems
Enjoyed going over picture books
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - low normal

Social characteristics

Socially well-adjusted
Shared toys with friends

Emotional characteristics

Found no trouble at home or in school
A happy child
Gave up work sometimes

Experiential background

Seldom went on outings with family
Was read to two or three times a week
Watched television from six to fifteen hours per week
Was told stories less often than once a week
Background information

School entrance age - 72 months
Readiness category - High Normal
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 2

Physical characteristics

Visual perception - high normal
Auditory perception - superior
Motor control - superior
Display of energy when playing - less than average

Intellectual characteristics

Liked to do things without help
Imitated other children
Very interested in stories told or read
Creative, loved to paint and draw
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - high normal

Social characteristics

Liked teachers
Friendly
Harmonious

Emotional characteristics

Had self-confidence
Lack concentration when engaged in some task
Liked school, extremely interested in grade one
Experiential background

Given preschool help with reading, taught phonics. Was read to two or three times a week. Travelled to North America. Went on outings once a month.

Case Study No. 7 GB7

Background information

School entrance age - 72 months
Readiness category - superior
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 2

Physical characteristics

Visual perception - superior
Auditory perception - average
Motor control - high normal
Display of energy when playing - more than average

Intellectual characteristics

Shared in relating experiences especially during mealtime
Asked questions
Had a library corner and liked library books
Very interested in stories told
Creative, enjoys drawing
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - superior

Social characteristics

Enjoyed companionship
Shared toys with playmates
Emotional characteristics

Congenial at home
Did not like first grade teacher
Worked to the end of task

Experiential background

Was read to every day
Watched television for five or fewer hours per week
Had plenty of reading materials at home
Was told stories often

Case Study No. 8 GB8

Background information

School entrance age - 70 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 3

Physical characteristics

Visual perception - high normal
Auditory perception - average
Motor control - high normal
Display of energy when playing - average

Intellectual characteristics

Exchanged experiences with friends
Observant and interested in things
Interested in books
Curious about printed words on television commercials
Richness of verbal concept - high normal
Vocabulary - high normal
Number knowledge - average
Social characteristics

Lovable, a friend of everybody
Liked teachers
Shared toys and games

Emotional characteristics

Did not get into trouble
Shy at the beginning in kindergarten school
Not consistent with job undertaken, sometimes gave up, sometimes did not

Experiential background

Travelled in North America
Went on outings once a week with parents and friends
Was read to every day
Was told stories every day
Watched television for more than sixteen hours per week

Case Study No. 9  GGl

Background information

School entrance age - 76 months
Readiness category - average
Language spoken at home - bilingual (English and German)
Number of children in the family - 3
Position in the family - 1

Physical characteristics

Visual perception - superior
Auditory perception - average
Motor control - low normal
Display of energy when playing - average
Intellectual characteristics

Observant but did not talk much probably because of language difficulty; parents did not speak English. Loved to look at pictures in books. Richness of verbal concept - high normal. Vocabulary - high normal. Number knowledge - high normal.

Social characteristics

Enjoyed the company of other children. Liked teachers. Shy with adults, especially with strangers, before going to school but became socially well-adjusted later.

Emotional characteristics

Did not want to go to school in the beginning because of language handicap. Quite shy before starting school.

Experiential background

Parents speak a foreign language and could not give the child help with reading. But the child was exposed to the environment, hence she easily picked up words. They went on outings once a week and travelled to out-of-town places. Through television viewing the child developed her vocabulary and became interested in reading.

Case Study No. 10 GG2

Background information

School entrance age - 66 months
Readiness category - low normal
Language spoken at home - monolingual (English)
Number of children in the family - 5
Position in the family - 3
Physical characteristics

Visual perception - average
Auditory perception - low normal
Motor control - low normal
Display of energy when playing - average

Intellectual characteristics

Did not talk much
Eager to do things by herself
Interested in stories read or told to her
Loved books
Creative, enjoyed painting
Richness of verbal concept - high normal
Vocabulary - high normal
Number knowledge - low normal

Social characteristics

Shy
Played only with sisters and brothers
Liked teachers

Emotional characteristics

Cried in school in the beginning
Congenial at home
Has self-confidence

Experiential background

Mother too busy to give any preschool help in reading
Read to by elder brothers once a week
Was told stories by members of the family less often than once a week
Had not travelled
Seldom went on outings with family
Case Study No. 11  GG3

Background information

School entrance age - 74 months
Readiness category - average
Language spoken at home - bilingual (English and German)
Number of children in the family - 4
Position in the family - 1

Physical characteristics

Visual perception - low normal
Auditory perception - superior
Motor control - low normal
Display of energy when playing - less than average

Intellectual characteristics

Curious, eager to learn
Very interested in stories read or told her
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - average

Social characteristics

Liked teachers
Shy with adults
Would not share toys with others

Emotional characteristics

Bossy with other children
Did not like school at the beginning
Had no self-confidence, gave up easily when working or playing
Experiential background

Sickly and could not go on outings often
Read to every day
Mother told stories and asked questions on the story almost every day
Did not watch television during preschool days, no television set at the time

Case Study No. 12   GG4

Background information

School entrance age - 68 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 1
Position in the family - only child

Physical characteristics

Visual perception - poor
Auditory perception - high normal
Motor control - low normal
Display of energy when playing - average
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - high normal

Intellectual characteristics

A good talker
Demanded explanation for everything
Wanted to know what parents do when they were kids
Wanted to do things by herself
Interested in the letters of the alphabet
Curious about written words on television
Social characteristics

A happy child
Got along well with others
Liked kindergarten and grade one teachers
Shared playthings with friends

Emotional characteristics

Liked very much to go to school with a girl friend
Had self-confidence
Mischievous at times
Easily gave up when engaged in some tasks

Experiential background

Learned to read and write the alphabet before going to school through parents' help
Was told stories every night
Watched television for five to fewer hours per week
Went on outings with parents once a week

Case Study No. 13   GG5

Background information

School entrance age - 76 months
Readiness category - high normal
Language spoken at home - monolingual (English)
Number of children in the family - 1
Position in the family - only child

Physical characteristics

Visual perception - high normal
Auditory perception - high normal
Motor control - low normal
Display of energy when playing - more than average
Intellectual characteristics

Curious as a child  
Loved to mimic  
Enjoyed conversing with others  
Started walking at 10 months  
Said big words heard on television  
Richness of verbal concept - superior  
Vocabulary - high normal  
Number knowledge - superior

Social Characteristics

Always greeted people and bade them goodbye  
Shared toys with other children  
Liked teachers

Emotional characteristics

A happy child  
Had good power of concentration  
Loved parents and grandmother very much  
Self-confident

Experiential background

Watched television and learned new words  
Exposed to the environment. Mother took her out and showed her things around  
Went on outings with parents once a week  
Was read to every day  
Was told stories and asked questions on them once a week

Case Study No. 14  GG6

Background information

School entrance age - 71 months  
Readiness category - high normal  
Language spoken at home - monolingual (English)  
Number of children in the family - 2  
Position in the family - 2
Physical characteristics

Visual perception - superior
Auditory perception - high normal
Motor control - high normal
Display of energy when playing - average

Intellectual characteristics

Did not participate much in conversations
Alert, quick to grasp things
Interested in books and magazines
Creative, loved to draw
Showed eagerness to do things by herself
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - superior

Social characteristics

Played only with sister
Shy
Liked teachers

Emotional characteristics

Mother was strict; usually screamed at children when giving orders
Congenial in school
When engaged in some work or game sometimes she gave up easily and sometimes worked till the end of task

Experiential background

Travelled to North America
Father has a keen mind and usually asked questions
Was read to less often than once a week because mother was too busy
Was seldom told stories
Went rarely on outings
Case Study No. 15  GG7

Background information

School entrance age - 69 months  
Readiness category - high normal  
Language spoken at home - English  
Number of children in the family - 2  
Position in the family - 2

Physical characteristics

Visual perception - superior  
Auditory perception - high normal  
Motor control - high normal  
Display of energy when playing - average

Intellectual characteristics

An energetic conversationalist  
Interested in books and always asked mother to read for her  
Loved to imitate others  
Richness of verbal concept - high normal  
Vocabulary - high normal  
Number knowledge - high normal

Social characteristics

Very friendly and cooperative  
Liked kindergarten and first grade teachers  
Shared toys and games  
Harmonious

Emotional characteristics

Felt secure at home  
Liked school all the time
Experiential background

Travelled to North America
Went on outings once a month
Had plenty of books at home
Was not told stories at home during early school year
Watched television for more than one and a half hours per week

Case Study No. 16 GG8

Background information

School entrance age - 66 months
Readiness category - average
Language spoken at home - bilingual (English and Chinese)
Number of children in the family - 4
Position in the family - 2

Physical characteristics

Visual perception - high normal
Auditory perception - high normal
Motor control - low normal
Display of energy when playing - less than average

Intellectual characteristics

Not much of a talker because of language barrier
Had self motivation; explored new things
Curious about printed words
Enjoyed books and other reading materials
Richness of verbal concept - average
Vocabulary - average
Number knowledge - high normal
Social characteristics

Hated outdoor games
Preferred to play by herself at home
Liked teachers

Emotional characteristics

Congenial at home and in school
Worked till end of task
Had self-confidence

Experiential background

Was not given any help in reading because parents speak a foreign language at home
Older sister sometimes read stories to her
Did not go on outings with family

Case Study No. 17  PB9

Background information

School entrance age - 67 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 2
Position in the family - 2

Physical characteristics

Visual perception - high normal
Auditory perception - high normal
Motor control - average
Display of energy when playing - average
Intellectual characteristics

Observant
Enjoyed talking with playmates
Did not show interest in reading, preferred play periods in school
Not curious
Richness of verbal concept - average
Vocabulary - average
Number knowledge - low normal

Social characteristics

Harmonious
Shared toys and games with others
Liked teachers
Enjoyed company of friends

Emotional characteristics

Got along well with members of the family
Congenial in school
Finished work begun
Lacked self-confidence

Experiential background

Was never read to, parents are non-readers
Was not given any preschool help with reading
Watched television for six to fifteen hours per week
Went on outings once a week
Travelled to United States
Was told stories once a week

Case Study No. 18  PB10

Background information

School entrance age - 76 months
Readiness category - low normal
Language spoken at home - bilingual (English and Chinese)
Number of children in the family - 11  
Position in the family - 7

Physical characteristics

Visual perception - low normal  
Auditory perception - low normal  
Motor control - low normal  
Display of energy when playing - less than average

Intellectual characteristics

Bashful with adults  
Showed no interest in learning to read  
Not eager to discover new things  
Never asked questions  
Richness of verbal concept - high normal  
Vocabulary - average  
Number knowledge - low normal

Social characteristics

Withdrawn  
Bashful  
Shared toys with playmates  
Liked teachers

Emotional characteristics

Shy in school, had inferiority complex  
Lazy, unwilling to do any work  
Did not get much attention from parents because of too many children in the family

Experiential background

Was not read to nor was told stories because parents speak a foreign language  
Did not go on outings with family  
Environment not conducive to learning  
Watched television more than sixteen hours a week but claimed he did not learn anything from it  
Travelled to the States and North America
Case Study No. 19  PB11

Background information

School entrance age - 66 months
Readiness category - average
Language spoken at home - bilingual (English and Italian)
Number of children in the family - 3
Position in the family - 3

Physical characteristics

Visual perception - high normal
Auditory perception - high normal
Motor control - high normal
Display of energy when playing - average

Intellectual characteristics

Enjoyed talking with friends
Did not display any interest for reading
Not inquisitive
Richness of verbal concept - low normal
Vocabulary - superior
Number knowledge - average

Social characteristics

Socially well adjusted
Harmonious
Shared games and toys
Liked teachers

Emotional characteristics

Father died when he was still very young and mother got very sick
Inattentive, slightly interested in stories read or told to him
Left work undone
Experiential background

Was read to once a week
Was told stories once a week
Very seldom went on outings
Watched television from sixteen or more hours a week
Was not given any preschool help with reading

Case Study No. 20 PB12

Background information

School entrance age - 76 months
Readiness category - average
Language spoken at home - bilingual (English and German)
Number of children in the family - 2
Position in the family - 1

Physical characteristics

Visual perception - high normal
Auditory perception - low normal
Motor control - high normal
Display of energy when playing - more than average

Intellectual characteristics

Enjoyed conversing with playmates
Did not show any preschool interest in learning to read
Not curious
Richness of verbal concept - high normal
Vocabulary - average
Number knowledge - average

Social characteristics

Happy and polite child
Harmonious
Liked teachers
Emotional characteristics

Restless in first grade
Easy-going
Inattentive
Gave up work or game easily
Did not like school in the beginning

Experiential background

Seldom went on outings with parents
Parents are not fond of reading, they never told him stories
Seldom read to
Travelled to North America

Case Study No. 21  PB13

Background information

School entrance age - 70 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 2
Position in the family - 2

Physical characteristics

Visual perception - high normal
Auditory perception - low normal
Motor control - high normal
Display of energy when playing - more than average

Intellectual characteristics

Enjoyed talking about experiences
Eager to do things for himself
Asked questions
No preschool interest in learning to read
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge - low normal
Social characteristics

Enjoyed companionship
Shared toys and games
Liked teachers

Emotional characteristics

Congenial at home and in school
Smiling, sunny disposition
Worked to the end of any task given him
Slightly interested in stories told or read to him

Experiential background

Was read to every day
Was told stories every day
Went on outings with parents frequently
Watched television from six to fifteen hours per week
Had too much parental permissiveness

Case Study No. 22 PB14

Background information

School entrance age - 66 months
Readiness category - low normal
Language spoken at home - monolingual (English)
Number of children in the family - 11
Position in the family - 7

Physical characteristics

Visual perception - low normal
Auditory perception - average
Motor control - poor
Display of energy when playing - average
Intellectual characteristics

Took part in conversations
Not interested in reading in spite of the many reading materials available at home
More interested in drawing and trumpet playing
Not inquisitive
Never attempted to do things by himself
Richness of verbal concept - average
Vocabulary - average
Number knowledge - poor

Social characteristics

An extrovert
Harmonious
Shared toys with friends
Liked teachers

Emotional characteristics

Neat with his work and belongings
Finished work begun
Moody; sometimes poor behavior, sometimes good
Belongs to a big family and quite insecure at home
Felt more secure at school
Lacked self-confidence

Experiential background

Went on outings with family once a week
Was read to less often than once a week
Was told stories only when information was asked for
Was not given any help with reading
Watched television for more than sixteen hours per week
Had plenty of books in the house
Background information

School entrance age - 73 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 3

Physical characteristics

Visual perception - low normal
Auditory perception - high normal
Motor control - low normal
display of energy when playing - more than average

Intellectual characteristics

Joined conversations
Did not show any preschool interest in learning
to read
Not curious
Did not display eagerness to do anything by himself
Richness of verbal concept - average
Vocabulary - superior
Number knowledge - high normal

Social characteristics

Harmonious with friends
Shared toys with playmates

Emotional characteristics

Hated teacher in first grade because she scolded
him in class and he got embarrassed; not at
all interested in first grade
Behavior at home was sometimes good and at other
times bad
Experiential background

Went on outings with family once a week
Travelled in North America and the States
Was read to once a week
Was told stories once a week
Was told stories once a week
Watched television for more than sixteen hours per week

Case Study No. 24 PB16

Background information

School entrance age - 74 months
Readiness category - average
Language spoken at home - monolingual (English)
Number of children in the family - 1
Position in the family - only child

Physical characteristics

Visual perception - low normal
Auditory perception - low normal
Motor control - low normal
Display of energy when playing - less than average

Intellectual Characteristics

Had no interest in learning to read during preschool years
Restraint in conversations
Not inquisitive
Did not attempt to do things by himself
Richness of verbal concept - superior
Vocabulary - average
Number knowledge - high normal
Social characteristics

Very shy and quiet
Did not share toys with others
Did not like his teachers in early grades

Emotional characteristics

Over dependent
Cried most of the time in kindergarten school
Gave up easily when playing or working

Experiential background

Seldom went on outings with parents
Seldom was told stores or read to
Watched television for 16 or more hours per week
Was not given preschool help with reading

Case Study No. 25  PG9

Background information

School entrance age - 67 months
Readiness category - low normal
Language spoken at home - bilingual (English and Chinese)
Number of children in the family - 3
Position in the family - 1

Physical characteristics

Visual perception - average
Auditory perception - poor
Motor control - high normal
Display of energy when playing - average
Intellectual characteristics

Was inhibited from engaging in conversations because of poor command of language
Not inquisitive
Did not show any sign of interest in learning to read
Richness of verbal concept - low normal
Vocabulary - poor
Number knowledge - low normal

Social characteristics

Bashful in school
Did not enjoy the company of other children

Emotional characteristics

Had inferiority complex because of language difficulty
Lacked parental attention because parents are too busy with their business and hardly have time left for the children

Experiential background

Never went on outings with parents
Was not told stories or read to
Nobody else gave the child preschool help with reading
Watched television for six to fifteen hours a week where she learned English
Lived in a community where playmates were bilingual too, speaking a second language different from her own.

Case Study No. 26  PG10

Background information

School entrance age - 67 months
Readiness category - poor risk
Language spoken at home - monolingual (English)
Number of children in the family - 6
Position in the family - 5

Physical characteristics

Visual perception - poor
Auditory perception - poor
Motor control - poor
Display of energy when playing - more than average

Intellectual characteristics

Hardly talked with people other than members of the family
No interest at all in reading during preschool years
No initiative to do any kind of work
Not inquisitive
Richness of verbal concept - poor
Vocabulary - poor
Number knowledge - poor

Social characteristics

Got into quite a lot of trouble with the other children
Did not like kindergarten teacher but liked the first grade teacher
Did not share toys with others

Emotional characteristics

Behavior at home was sometimes good and sometimes bad
Restless
Left work unfinished sometimes
Suffered by comparison with a brighter sister
Had self-confidence

Experiential background

Had travelled in North America
Went on outings with parents once a week
Watched television from six to fifteen hours a week
Was told stories before he started school less often than once a week
Was not given any preschool help with reading
Was not read to

Case Study No. 27  PG11

Background information

School entrance age - 75 months
Readiness category - high normal
Language spoken at home - monolingual (English)
Number of children in the family - 2
Position in the family - 2

Physical characteristics

Visual perception - superior
Auditory perception - high normal
Motor control - superior
Display of energy when playing - average

Intellectual characteristics

Answered in monosyllables when talked to
Was not eager to do things by herself
Not curious
Not interested in books
Richness of verbal concept - high normal
Vocabulary - superior
Number knowledge- high normal

Social characteristics

Very shy
Preferred to work alone
Liked teachers
Would not share toys with others
Emotional characteristics

Not interested in school
Busy, always doing something but did not always complete the task
Had self-confidence

Experiential background

Travelled in North America
Was read to every day
Was told stories every day
Watched television from six to fifteen hours per week
Went on outings once a month with parents
No help was given in early reading

Case Study No. 28  PG12

Background information

School entrance age - 74 months
Readiness category - low normal
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 1

Physical characteristics

Visual perception - poor
Auditory perception - average
Motor control - poor
Display of energy when playing - more than average

Intellectual characteristics

Seldom talked
Was not interested in learning to read
Did not ask questions
No initiative
Did not show any desire to do things by himself
Richness of verbal concept - low normal
Vocabulary - high normal
Number knowledge - poor

Social characteristics

Enjoyed being with playmates
Liked teachers
Shared toys
Harmonious

Emotional characteristics

Congenial at home
liked school although she was not good with her
school work
No confidence in self
Gave up easily when engaged in some work

Experiential background

Went on outings with parents once a week
Was not told stories
Was not read to
Watched television for sixteen or more hours per week
Was not given any help in reading

Case Study No. 29 PG13

Background information

School entrance age - 67 months
Readiness category - low normal
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 3
Physical characteristics

Visual perception - average
Auditory perception - low normal
Motor control - superior
Display of energy when playing - more than average

Intellectual characteristics

Participated in conversation only when asked
Not inquisitive
Did not show any interest in learning to read
Was not eager to do things by herself
Richness of verbal concept - poor
Vocabulary - low normal
Number knowledge - low normal

Social characteristics

Shy
Liked teachers
Unwilling to share toys with others
Preferred to play alone

Emotional characteristics

Cried intermittently in kindergarten school
Had no confidence in herself
Felt secure at home
Worked till end of task
Depended too much on older sister

Experiential background

Travelled in North America
Went on outings once a week with parents
Was read to three times a week
Was told stories once a week
Watched television five or fewer hours per week
Was not helped with preschool reading
Background information

School entrance age - 73 months
Readiness category - low normal
Language spoken at home - monolingual (English)
Number of children in the family - 4
Position in the family - 2

Physical characteristics

Visual perception - poor
Auditory perception - low normal
Motor control - low normal
Display of energy when playing - average

Intellectual characteristics

Reticent
Not eager to explore
Not interested in learning to read
Did not show any interest for books
Richness of verbal concept - average
Vocabulary - low normal
Number knowledge - average

Social characteristics

Timid
Did not like teacher in first grade but liked the kindergarten teacher
Preferred quiet games
Shares toys with brother and sisters

Emotional characteristics

Carefree
Inattentive
Lacked concentration
Gave up easily any work engaged in
self-confident
Experiential background

Went on outings very seldom
Was told stories less often than once a week
Was read to rarely
Watched television for sixteen or more hours a week
Was not given help in reading during preschool years

Case Study No. 31  PG15

Background information

School entrance age - 68 months
Readiness category - low normal
Language spoken at home - bilingual (English and French)
Number of children in the family - 4
Position in the family - 4

Physical characteristics

Visual perception - high normal
Auditory perception - low normal
Motor control - poor
Display of energy when playing - more than average

Intellectual characteristics

Asked many questions
Interested in many things around her
A good conversationalist at home but not in school
Read aloud well but poor in comprehension
Wanted to try new things
Showed interest in learning to read before going to school
Richness of verbal concept - average
Vocabulary - low normal
Number knowledge - average
Social characteristics

Enjoyed the company of other children
Liked teachers
Harmonious
Shared toys and games

Emotional characteristics

Very close to parents
Wanted to go home during first days in school
Self-confident
Had good concentration ability
Finished all tasks started

Experiential background

Went on outings once a week
Mother answered all questions asked
Watched television for fewer than five hours per week
Travelled to the States
Did not get any help with reading
Was read to three times a week
Was told stories every day

Case Study No. 32  PG16

Background information

School entrance age - 68 months
Readiness category - high normal
Language spoken at home - monolingual (English)
Number of children in the family - 3
Position in the family - 2

Physical characteristics

Visual perception - superior
Auditory perception - superior
Motor control - low normal
Display of energy when playing - average
Intellectual characteristics

Restrained in expression
Did not show any interest in learning to read
Seldom asked questions
Did not venture to do things by herself
Richness of verbal concept - superior
Vocabulary - superior
Number knowledge - superior

Social characteristics

Enjoyed being with others
Shared toys and games with friends
Liked teachers
Bashful

Emotional characteristics

Did not like to go to school in the beginning
Lacked self-confidence
Congenial at home
Worked to the end of any task

Experiential background

Travelled to the States
Was read to less often than once a week
Was told stories once a week
Watched television for five or fewer hours per week
Had plenty of books at home but child did not show any interest in them
Went on outings once a month
Was not given any help with reading