

SOCIO - ECONOMIC VERSUS EDUCATIONAL INPUT VARIABLES
AS RELATED TO GRADE IV READING ACHIEVEMENT
AMONG BOYS IN ST. JOHN'S, NEWFOUNDLAND

CENTRE FOR NEWFOUNDLAND STUDIES

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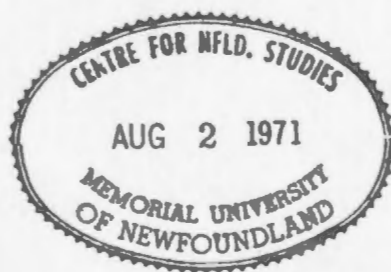
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MEMORIAL UNIVERSITY OF NEWFOUNDLAND

SOCIO-ECONOMIC VERSUS EDUCATIONAL INPUT VARIABLES

AS RELATED TO GRADE IV READING ACHIEVEMENT

AMONG BOYS IN ST. JOHN'S, NEWFOUNDLAND

by

 GERALDINE MARY ROE

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ABSTRACT

The major purpose of this study was to determine whether socio-economic variables were more related to reading achievement among grade four boys in urban Newfoundland than were certain educational inputs which have in the past been given emphasis in efforts to raise educational productivity in the province. Several minor hypotheses were set up to elucidate the relationships between reading achievement, as measured by vocabulary and paragraph comprehension scores, and the following variables: intelligence, father's occupation, mother's education, reading material at home, size of family, pupil absenteeism, teacher's qualifications and size of the school.

Three hundred and fifty pupils were selected randomly from the fourth grade male population in schools within the city limits and operating under the jurisdiction of the Roman Catholic School Board for St. John's. Data collection took place in May and June, 1968, using three standardized tests and two questionnaires. A complete set of data was obtained for 305 pupils, their parents, their twenty-five teachers and twelve schools.

Pearson product-moment correlation, partial product-moment correlation and multiple correlation were used to

test the hypotheses. A descriptive analysis of the data, classifying pupils by each of the variables in the study and using means and medians, was also presented. Most of the calculations were carried out by means of the computer at Memorial University.

The major finding of this study revealed that when variables were combined in multiple correlation the socioeconomic variables explained a much larger proportion of the variance in reading achievement than did the combined group of educational input variables. Furthermore, of the sociological variables considered, two -- father's occupation and mother's education -- predicted achievement in reading almost as well as the whole group combined. One other sociological factor, size of family, contributed slightly to the multiple correlation coefficient when reading comprehension was used as the dependent variable. The two educational variables used in this study accounted for only a negligible amount of the variance in pupils' reading achievement. However, of the whole group of factors considered, intelligence proved to be the best predictor of reading achievement.

The findings of this study suggest the need for educators to recognize that certain factors remote from

the school exert a great influence on the reading achievement of pupils and to take these factors into account when devising educational policies and programs. Compensatory educational arrangements as well as diagnostic and remedial procedures to effect cure should be considered. Concomitantly, consideration should be given by those interested in education in the province to raising the socio-economic and cultural levels of the homes through a long-range program of involvement in adult education.

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CHAPTER I

THE PROBLEM

This study attempts to identify some of the crucial factors related to reading achievement in urban Newfoundland. It measures the strength of the relationships of reading achievement with such educational variables as teacher's qualifications and size of school, and with such socio-economic variables as father's occupation, mother's education, and size of family. It attempts to find out whether the sociological variables are more closely related to reading achievement than are the educational variables.

One of the major purposes of the elementary school is generally considered to be the development and perfection of the basic skills upon which further learning throughout future school and adult years can be built. It seems agreed that the most basic skill the elementary school is expected to develop is reading. Reading is at the very core of the curriculum, and skill in reading is basic to achievement in school. In the lower elementary grades especially, a measure of reading achievement is almost synonymous with a measure of achievement in school.

Recent studies by Martin and Kennedy reported that the low retention rate in Newfoundland schools was mainly associated with the repetition of grades and failure to achieve in school subjects, especially reading.¹

Learning to read is a very complex process. No single factor can explain success or failure in reading since there are a great many variables which influence a person's reading achievement. Pupils of comparable ability who are taught reading in the same manner by the same teacher and using the same material realize different levels of reading comprehension, varying interpretations, and diverse values. There are reasons to suspect that what each individual brings to the reading experience is the key to his reading achievement, and that the foundations are set long before the child enters school and participates in formal reading activities. It has been recognized that children bring to bear on what they

¹George E. Martin, "A Survey of Factors Related to Dropouts in Newfoundland Central High Schools in 1961-62" (unpublished Master's thesis, The University of Alberta, Edmonton, 1962), p. 115; Sister Mary Perpetua Kennedy, "A Critical Analysis of the Dropout Problem in the Province of Newfoundland Over the Ten Year Period 1954-64" (unpublished Master's thesis, the Catholic University of America, Washington, D.C., 1966), cited in Province of Newfoundland and Labrador, Report of the Royal Commission on Education and Youth, Vol. I (St. John's: The Queen's Printer, 1967), pp. 38-43.

read much of their total experience, background, interests, attitudes, and numerous other facets significantly conditioned by their home.

Studies conducted elsewhere have presented evidence that achievement in school is related directly to the socio-economic status of the family and to the degree of literacy in the child's environment, particularly his home, but inversely to the size of the family.² Burkhead, in a recent study of school inputs and outputs in the United States, contends that the school although important is not the only developer of human resources. Environmental influences are very important factors in this development.³

The present study attempts to measure the relevance to reading of certain factors in the home environment and to compare their relevance with that of factors in the school environment which have long been associated with success or failure in reading.

²See, for example, Allison Davis, Social Class Influences Upon Learning (Cambridge: Harvard University Press, 1948) and John Nisbet, "Family Environment and Intelligence," Education, Economy and Society, A.H. Halsey et al., editors (New York: The Free Press of Glencoe, 1964), pp. 273-87.

³Jesse Burkhead, with Thomas G. Fox and John W. Holland, Input and Output in Large City High Schools (New York: Syracuse University Press, 1967), p. 12.

I. READING ACHIEVEMENT IN NEWFOUNDLAND

Studies and surveys carried out in Newfoundland schools in recent years show that pupils are below the level of their Canadian and American counterparts in reading vocabulary and reading comprehension.

Dunphy (1957) and Henley (1961) reported a low level of reading achievement in both urban and rural areas of the province.⁴ Henley studied grade eight pupils in small and large schools on the Avalon peninsula and reported that all of the children in the study were "decidedly retarded in reading achievement," according to the test norms established for the Gates Reading Survey.⁵

A survey was carried out by the Department of Education in 1964 among grade nine pupils using The Metropolitan Achievement Tests. Although pupils in regional high schools and large all-grade schools scored appreciably higher than those in central high schools and small all-grade schools, the standard was below the test

⁴Sister Hildegard Dunphy, "A Comparison of Reading Achievement of Sixth-Grade Urban and Non-Urban Pupils" (unpublished Master's thesis, The Catholic University of America, Washington, D.C., 1957); Sister Gonzaga Henley, "A Comparative Study of Eighth-Grade Students in Small and Large Schools in the Catholic Schools of the Province of Newfoundland" (unpublished Master's thesis, The Catholic University of America, Washington, D.C., 1961).

⁵ Henley, op. cit., p. 21.

norms for all categories. Median achievement for the entire sample was reported to be one year below the norms used in the test.⁶

In another survey conducted by the Department of Education in 1965 on a ten per cent sample of grade six pupils in Newfoundland schools and using The Dominion Achievement Tests similar results were reported. The median grade for the sample was 6.1 in reading vocabulary and 6.0 in reading comprehension compared to the norm of 6.9 based on rural schools in Ontario.⁷

The Report of the Royal Commission on Education and Youth stated that the low scores in reading in Newfoundland should be a matter of grave concern and recommended that remedial procedures be directed toward this weakness.⁸

Most of the research in the province, however, has been in the nature of general surveys designed mainly to

⁶News Letter, Department of Education, St. John's, Vol. 16, No. 3 (November, 1964).

⁷News Letter, Department of Education, St. John's, Vol. 17, No. 2 (October, 1965).

⁸Royal Commission, loc. cit.

compare reading achievement in Newfoundland schools with schools outside the province. Some of the surveys referred to above reported relationships between reading achievement and variables such as teachers' qualifications and size of the school.⁹ None of the studies, however, attempted to control or to measure such productivity related variables as the socio-economic level of the pupil and his family.

However, from a study of differences in educational productivity among census divisions in the Atlantic provinces, Kitchen concluded that low educational outputs and high retardation rates were related more to demographic and socio-economic variables such as adult illiteracy, non-employment, father's occupation, and family size than to educational inputs such as expenditures on teacher's salaries. He recommended:

That attempts at increasing educational output go beyond the raising of teachers' salaries and qualifications, important as they are to tackle the more basic problems of educationally-deprived homes and community environments, fatalism, large families, and chronic non-employment.¹⁰

⁹See, for example, Henley, op. cit.; Royal Commission, op. cit.

¹⁰H.W. Kitchen, "A Preliminary Study of Demographic and Socio-Economic Factors in the Atlantic Provinces and Their Relationships to Measures of Educational Outputs" (Mimeographed; October, 1967) p. 42.

The same study reported that higher educational outputs in Newfoundland were associated with urban census divisions and that in those areas illiteracy was not prevalent among the age group who would be the parents of today's young children.¹¹

II. PURPOSE OF THE STUDY

The major purpose of this study is to determine whether socio-economic variables bear a higher relationship to reading achievement than do certain educational input variables. Several other questions will also be explored:

- (1) What is the relationship between verbal intelligence and reading achievement?
- (2) What is the relationship between father's occupation and pupil's reading achievement?
- (3) What is the relationship between mother's education and pupil's reading achievement?
- (4) What is the relationship between the availability of reading material in the home and pupil's reading achievement?
- (5) What is the relationship between size of family and pupil's reading achievement?

¹¹Ibid., p. 6.

(6) What is the relationship between absenteeism and pupil's reading achievement?

(7) What is the relationship between teacher's qualifications and pupil's reading achievement?

(8) What is the relationship between the size of school and pupil's reading achievement?

III. SIGNIFICANCE OF THE STUDY

Studies and surveys point out that there is cause for grave concern about the low level of reading in the province, and also that the deficiency is probably due in large part to factors other than teacher's qualifications and the size of schools. To the writer's knowledge no research has been carried out in urban areas of Newfoundland to discover the relationship that exists between social, cultural, or economic factors and reading achievement.

Teachers in urban areas tend to be well qualified, schools to be well equipped and large expenditures to be made for education. Yet a large proportion of the pupils are failing and repeating grades and dropping out of school because they cannot read. Consequently, it seems important that an intensive study be carried out with the aim of

investigating certain identified variables and ascertaining the relative importance of each variable on reading achievement.

This investigation is an attempt to explore certain factors in the child's home environment which have not been considered in previous surveys. In addition, the relative importance of intelligence and certain factors that operate within the school will be investigated in greater depth than in previous studies.

Accurate information obtained from such a study will, it is hoped, suggest courses of action that will lead to an alleviation of the reading problem in the province.

IV. OPERATIONAL DEFINITIONS

This section contains a brief description, operationally defined, of each of the variables used in the study. Further details are contained in subsequent chapters.

Reading Achievement

Reading achievement refers to the scores obtained by a pupil of The Nelson Reading Test 1962 Revised Edition, Form A.

Reading Comprehension

The raw score obtained by a pupil on the Paragraph Comprehension sub-test of The Nelson Reading Test 1962 Revised Edition was used as an indicator of achievement in reading comprehension.

Reading Vocabulary

The raw score obtained by a pupil on the Vocabulary sub-test of The Nelson Reading Test 1962 Revised Edition was used as an indicator of achievement in vocabulary.

Verbal Intelligence

Verbal Intelligence refers to a pupil's deviation intelligence quotient as determined by his score on The Lorge Thorndike Intelligence Test, Form 3 AV.

Nonverbal Intelligence

Nonverbal Intelligence refers to a pupil's deviation intelligence quotient as determined by his score on The Lorge Thorndike Intelligence Test, Form 3 ANV.

Father's Occupation

The occupation of the child's father or guardian was obtained from a questionnaire that was sent to the

home.¹² Occupations were then assigned numbers using the Blishen Occupational Scale. This variable was used as a measure of socio-economic status.

Mother's Education

Mother's education was also used as an indicator of socio-economic status, and was rated on a twenty-point scale based on the highest grade obtained in an institution of formal learning. A copy of this scale is contained in Appendix E. A questionnaire was sent to the home to obtain the necessary information.¹³

Reading Material at Home

Reading material available in the home was used as another indicator of socio-economic status. The information was obtained from a questionnaire that was sent to the home.¹⁴ Responses were rated on a three-point scale, based on whether the family received a newspaper every day, once a week, or not at all.

¹²See Appendix B.

¹³Ibid.

¹⁴Ibid.

Size of Family

The number of children who were under eighteen and living at home was used as the size of each pupil's family. The questionnaire contained in Appendix B was used to gather data on family size. This variable was another indicator of socio-economic status.

Absenteeism

Absenteeism refers to the number of days pupils were absent from September 6, 1967, to April 30, 1968 (excepting long illnesses) and was taken from the school register by the writer.¹⁵ This variable was also used as an indicator of socio-economic status.

Teacher's Qualifications

An eleven-point scale based on the Newfoundland Department of Education grading system, was used for teacher's qualifications. The information was obtained from records at the School Board office. A copy of this scale is contained in Appendix D.

Size of School

The indicator used for size of school was the number of grade four classes in the school. The

¹⁵See Appendix C.

information was obtained from records at the School Board office.¹⁶

V. DELIMITATIONS

A number of delimitations of this study can be noted. First, it deals only with grade four pupils. Secondly, all pupils used in the study were boys. Thirdly, all pupils were Roman Catholic. Fourthly, all reside in one geographical area, namely, St. John's, the largest urban area in the province. Fifthly, the variables in the study do not exhaust all the factors in the student's background that affect reading achievement.

Two companion studies have been completed. One deals with similar variables underlying the reading achievement of grade six boys and girls in a typical Newfoundland rural area.¹⁷ Another deals with the effects of certain psychological factors on the reading achievement of a group of boys randomly selected from the sample used

¹⁶Ibid.

¹⁷Hector Pollard, "Socio-Economic Versus Educational Input Variables as Related to Grade VI Reading Achievement in Rural Newfoundland." (unpublished Master's thesis, Memorial University of Newfoundland, 1970).

in the present study.¹⁸

VI. ORGANIZATION OF THE REPORT

Chapter II of this report presents the hypotheses to be tested and reviews the research literature supporting each hypothesis. Chapter III contains the procedures followed in conducting the study, the methods used in collecting and processing the data and, a description of the statistical procedures. A descriptive analysis of the samples and the underlying variables is contained in Chapter IV. Chapter V reports the findings from testing the hypotheses. The final chapter summarizes the study, discusses conclusions, and makes specific recommendations for further research.

¹⁸Sister Margaret O'Gorman, "Extent to Which Psychological Factors Effect Reading in Grade IV." (unpublished Master's thesis, Memorial University of Newfoundland, 1970).

CHAPTER II

THE HYPOTHESES AND THE LITERATURE SUPPORTING THEM

In this chapter hypotheses are presented, stating the questions investigated and the findings expected. For convenience, the literature underlying the hypothesized relationship between each of the eight input variables and reading achievement is grouped under four headings. The minor hypotheses and the literature supporting them are presented in the first three sections of the chapter and the major hypothesis, that socio-economic inputs are more related to reading achievement than are educational inputs, is presented in the fourth section. The fifth section summarizes the chapter.

I. INTELLIGENCE AND READING ACHIEVEMENT

The first two hypotheses consider the effects of verbal intelligence on reading achievement. They imply that verbal intelligence scores will be good predictors of reading achievement.

The basic facts of the relationship between intelligence test scores and achievement in all subject areas are so well known that they scarcely need repeating.

Researchers who are interested in causal factors related to achievement recognize that pupil intelligence, as measured by standardized intelligence tests, is a significant predictor and attempt to control for this variable.

Payne reported that by the end of grade one, more than one-half of the children who will be failing in arithmetic in grade six can be identified on the basis of socio-economic status, intelligence test scores and arithmetic achievement tests. By the end of grade two, two-thirds of the children can be identified on the basis of these factors.¹

Witty and Kopel found a correlation of about .6 between reading-test scores and intelligence-test scores, and concluded that the correlation was too low to predict one from the other.² Monroe and Backus stated that "reading tests usually show a fairly high, but by no means perfect correlation with intelligence tests. Children who are retarded in general intelligence usually

¹Arlene Payne, "Early Prediction of Achievement," Administrator's Notebook, Vol. 13, No. 1 (1964).

²Paul Witty and David Kopel, Reading and the Educative Process (Boston:Ginn and Co., 1939), p. 225, cited by Helen M. Robinson, Why Pupils Fail Reading (Chicago: University of Chicago Press, 1946), p. 66.

are retarded in reading."³

Curry investigated a group of sixth-grade students in the mid-western United States and concluded that when a child has above average mental ability he will probably overcome the effects of a deprived home environment. However, as mental ability decreases deprived social and economic conditions in the home and community begin to have a more serious effect on scholastic achievement, especially in reading and the language arts.⁴ This conclusion is substantiated by Terman and Odens who report that given a high level of intelligence, successful and unsuccessful pupils differ primarily in terms of social and economic factors.⁵

³Marion Monroe and Bertie Backus, Remedial Reading: A Monograph in Character Education, (Cambridge: Houghton Mifflin Co., 1937), p. 21, cited by Hector Pollard, "Socio-economic Versus Educational Inputs as Related to Grade Six Reading Achievement in Rural Newfoundland" (unpublished Master's thesis, Memorial University of Newfoundland, St. John's, 1969), p. 15.

⁴Robert L. Curry, "The Effect of Socio-Economic Status on the Scholastic Achievement of Sixth-Grade Children," British Journal of Educational Psychology, Vol. 32 (May, 1962), pp. 46-49.

⁵L.T. Terman and A.H. Odens, The Gifted Child Grows Up (Stanford: Stanford University Press, 1947), cited by Robert L. Baker et al., "The Influence of Mental Ability on Achievement When Socio-Economic Status is Controlled," Journal of Experimental Education, Vol. 30 (September-June, 1961-62), p. 258.

Robinson in her review of the literature summarized the relationship between intelligence and reading:

First, inadequate intelligence appeared to cause inability to learn in all school subjects of which reading was but one phase; and, second, in children who had specific reading disabilities, intelligence seems to be distributed essentially as it is for the general population. In other words, severely retarded readers may be found with low, average or superior intelligence. ⁶

The same authority goes on to say:

Intelligence and reading ability appear to increase simultaneously in a large number of cases. However, the fact that they were not more highly correlated was deemed important, as it showed the need for consideration of other factors acting to prevent each child from reading up to the limit of his mental age. ⁷

Even though most authorities agree that there is a definite positive relationship between intelligence and reading achievement, they differ on the degree of the relationship and the identification of one as a cause of the other. In the literature reviewed for this study the correlations between measures of intelligence and reading achievement indicated a definite positive relationship, but not by itself sufficient to account for the wide variability found in reading scores.

⁶Helen M. Robinson, Why Pupils Fail Reading (Chicago: The University of Chicago Press, 1946), pp. 66-67.

⁷Ibid.

The interpretation of the findings of the relationship between reading achievement and intelligence seems to be complicated by a correspondence of similar magnitude between intelligence and socio-economic status. McLelland has tried to account for the high inter-correlation between intelligence, achievement and social class by suggesting that mental ability may function as a "threshold type" variable with respect to academic achievement. He states:

There appears to be a limited level of intelligence required to achieve in school, and beyond this point the correlation between intelligence and achievement may be due to uncontrolled variability on factors relating to the socio-economic status of the family. ⁸

Hypothesis I.

H₁: There will be a positive relationship between pupil's verbal intelligence and reading vocabulary.

Hypothesis II.

H₂: There will be a positive correlation between pupil's verbal intelligence and reading comprehension.

⁸D.C. McLelland, "Issues in the Identification of Talent," Journal of Experimental Education, Vol. 30 (September-June, 1958), p. 258.

Because of the high expected relationship between verbal intelligence and reading achievement, the hypotheses which follow will, when the correlations reach statistical significance, be examined, both before and after partialling out verbal intelligence.

II. SOCIO-ECONOMIC INPUTS AND READING ACHIEVEMENT

Hypotheses of this series consider the effects of five socio-economic variables on pupil's reading achievement. Father's occupation, mother's education, the availability of reading material in the home, size of the family and pupil's absenteeism from school were used as indicators of the socio-economic status of the home. These hypotheses imply that the five socio-economic variables will be good predictors of reading achievement.

The relationship between socio-economic status and achievement in school has been a subject of investigation during the past fifty years.

Gough (1946) found a positive correlation between socio-economic levels, vocabulary, and reading. He maintains that "students from homes of higher socio-economic status are younger, more intelligent, superior in vocabulary, reading, language, and health information, and had fewer personality problems than do pupils from

homes of lower socio-economic status."⁹

In 1963 Hill and Giamatteo examined the relationship between socio-economic status and reading achievement among third grade pupils in western Pennsylvania. They reported that vocabulary test scores correlated at .84 and paragraph comprehension test scores at .90 with a composite socio-economic status score, obtained from a nineteen-item questionnaire which included information on father's occupation, mother's education and size of family. The authors concluded that socio-economic status affects school achievement, especially reading, and that children from lower socio-economic levels do not overcome this deficiency by the end of grade three.¹⁰

On the other hand, Curry concluded on the basis of a sample of 360 sixth grade pupils that the child's home environment had no effect on scholastic achievement

⁹Harrison Gough, "Relationship of Socio-Economic Status to Personality Inventory and Achievement Test Scores," Journal of Educational Psychology, Vol. 37 (1947), pp. 527-40.

¹⁰Edwin Hill and Michael Giamatteo, "Socio-Economic Status and Its Relationship to School Achievement," Elementary English, Vol. 40 (February, 1963), pp. 265-270.

when pupils had high intelligence but, in the middle and lower ability groups socio-economic factors affected achievement in all subject areas and the differences were more pronounced in reading and the language arts.¹¹ It should be noted, that Curry's differences failed to reach statistical significance although sixteen of the eighteen were in the expected direction.

Effects of Father's Occupational Status

Sheldon and Carrillo reported that children who were good readers tend to come from homes where the fathers are employed in managerial and professional occupations; the average readers tend to come from homes where fathers are skilled or semi-skilled; and, poor readers from homes where the fathers are in agriculture, fishery, semi-skilled and unskilled occupations.¹²

In an intensive study of elementary and secondary schools in the midwestern United States, Sexton found that achievement scores of pupils are positively related to the father's income. Although the five achievement scores

¹¹Curry, loc. cit.

¹²W.D. Sheldon and L. Carrillo, "Relation of Parents, Home and Certain Developmental Characteristics to Childrens' Reading Ability," Elementary School Journal, Vol. 52 (January, 1952), pp. 262-271.

investigated were all related to the father's income, the highest correlations were found between the father's income and scores on reading achievement.¹³

Recent studies in the United States by such men as Bloom¹⁴ and Burkhead¹⁵ have found a significant positive relationship between the economic level of the home and achievement in school.

Hypothesis III.

H₃: There will be a positive relationship between father's occupational status and pupil's score on reading vocabulary.

Hypothesis IV

H₄: There will be a positive relationship between father's occupational status and pupil's score on reading comprehension.

¹³Patricia C. Sexton, Education and Income (New York: The Viking Press, 1961), p. 27.

¹⁴Benjamin S. Bloom, Allison Davis, and Robert Hess, Compensatory Education for Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1965).

¹⁵Jesse Burkhead, Thomas G. Fox, and John W. Holland, Input and Output in Large-City High Schools (New York: Syracuse University Press, 1967).

Effects of Mother's Education

The effect of parental education upon the reading achievement of pupils has been widely investigated.

A five year study of low achievers, or deteriorators, among a group of 181 grammar school children in the United Kingdom led Dale to conclude that low-achievers tend to come from the lower social classes. When the education of the parents was examined it was found that only one of the thirty-nine children in the deteriorator group came from a home where at least one parent had a grammar school education, whereas approximately sixty per cent of the children in the control group came from homes where one or more parents had attended grammar school. Although the authors admit that the differences cannot be attributed solely to the level of parental education the evidence points strongly to this as a major factor.¹⁶

The research of Jones gives support to this finding and states further that the influence of the mother's education on the progress of the child is greater than that of the father. This author reported a statistically significant relationship between the mother's education and the child's achievement and though the trend was the same the difference caused by the father

¹⁶R.H. Dale, Selected Findings From a Five-Year Study of Deteriorators in a Grammar School", Educational Research, Vol. 8, No. 2 (February, 1966), pp. 146-154.

not having a grammar school education was not statistically significant.¹⁷

Kitchen concluded that in Newfoundland the crux of low educational output seems to be the non-literate environment provided by many of the smaller settlements.¹⁸

The evidence suggests a positive relationship between the education of the mother and the pupil's achievement.

Hypothesis V

H₅: There will be a positive relationship between pupil's score on reading vocabulary and mother's education.

Hypothesis VI

H₆: There will be a positive relationship between pupil's score on reading comprehension and mother's education.

¹⁷C.V. Jones, "An Inquiry Into the Causes of Gross Discrepancy of Pupils on the 11-plus Examinations and Their Performance at the End of the First Year in a Welsh Grammar School" (unpublished Master's thesis, University College of Swansea, 1962), cited by Dale, op. cit.

¹⁸H.W. Kitchen, "A Preliminary Study of Demographic and Socio-Economic Factors in the Atlantic Provinces and their Relationships to Measures of Educational Output" (Mimeographed, October, 1967), p. 1.

Effects of Reading Material in the Home

Several researchers have investigated the quantity and quality of books, magazines, newspapers, encyclopedias and dictionaries found in the homes of pupils and related these to achievement in reading.¹⁹ They have concluded that the amount and the kind of reading material in the home are related directly to social class, and to achievement in reading. Although the studies were concerned mainly with the leisure reading of students these authors agreed that the example set by the parents is a key factor in the reading habits developed by children.

Crocker concluded that students from homes in which there are books and other materials read more than those from homes in which there is no emphasis on reading.²⁰

Hypothesis VII

H₇: There will be a positive relationship between pupil's score on reading vocabulary and the reading material

¹⁹See, for example, O.K. Crocker, "The Leisure Reading of High School Students in Newfoundland" (unpublished Doctoral dissertation, The University of Indiana, 1967), and Betty M. Brett, "A Survey of Leisure Reading of Grade Nine Students in Central High Schools of Newfoundland" (unpublished Master's thesis, The University of Alberta, Edmonton, 1964).

²⁰Crocker, op. cit., p. 243.

found in the home.

Hypothesis VIII

H₈: There will be a positive relationship between pupil's score on reading comprehension and the reading material found in the home.

Effects of Family Size

The relationship of family size to achievement in school has been investigated in other areas. In rural Pennsylvania, large families were among several factors negatively associated with high achievement scores and staying in school longer.²¹

In France, Gerard reported that the smaller the family the more likely a child will continue on to secondary education.²²

Sheldon and Carrillo found that there was a tendency for fewer of the children to become good readers as the size of the family increased.²³ From a careful study

²¹Paul B. Wilson and R.C. Buck, "The Educational Ladder," Rural Sociology, No. 25 (1960), pp. 404-413.

²²Alain Gerard, "The Orientation and Selection of School Age Children in the Department of Seine," Population, Vol. 8 (1953), pp. 649-672.

²³Sheldon and Carrillo, loc. cit.

of two large school districts in England Floud reported an inverse relationship between achievement in school and family size.²⁴

Kitchen reported that in Newfoundland, "An important underlying educational output ... is family size, particularly the number of children." The same author reported that in comparison with the other provinces Newfoundland was "most atypical, with at least .5 more children per family than the other Atlantic provinces."²⁵

Hypothesis IX

H₉: There will be an inverse relationship between the size of the family and pupil's score on reading vocabulary.

Hypothesis X

H₁₀: There will be an inverse relationship between the size of the family and pupil's score on reading comprehension.

²⁴J.E. Floud, A.H. Halsey, and F.M. Martin, Social Class and Educational Opportunity (Toronto: The McMillan Company, 1956).

²⁵Kitchen, op. cit., p. 12.

Effects of Absenteeism

In Great Britain Douglas and Ross found that in the upper-middle classes the performance on school tests was not affected by absenteeism whereas children from the middle and lower classes who had a history of frequent absences were handicapped in the 11-year tests.²⁶ The same authors reported that upper class children had fewer absences, and those who were frequently absent were less affected by the time lost than children from lower classes. Furthermore, children from large families were absent most.²⁷

In a study carried out in a large city in the United States Sexton reported that school attendance was related to family income, and the worse attendance records were found among children in the low income groups. She also found that children from the low income groups were scoring low on achievement tests, especially reading.²⁸

²⁶T.W.B. Douglas and J.M. Ross, "The Effects of Absence on Primary School Performance," British Journal of Educational Psychology, Vol. 35 (February, 1965), pp. 28-40.

²⁷Ibid.

²⁸Sexton, op. cit., p. 98.

Hypothesis XI

H₁₁: There will be an inverse relationship between absenteeism and pupil's score on reading vocabulary.

Hypothesis XII

H₁₂: There will be an inverse relationship between absenteeism and pupil's score on reading comprehension.

The literature reviewed in this section indicates that the socio-economic inputs being investigated in the present study have a significant effect on reading achievement. Furthermore, the five variables are so much interrelated that either one may perhaps be used as an indicator of social class.

III. EDUCATIONAL INPUTS AND READING ACHIEVEMENT

This section considers the effects of two educational variables on reading achievement. Hypotheses are established implying that the qualifications of the teacher will be a good predictor of reading achievement but that the size of the school will not be related to achievement in reading.

Effects of Teacher's Qualifications

The relationship between the qualifications of teachers and pupil's reading achievement scores has been the subject of much research. A comprehensive study by

Coleman in the United States revealed that the quality of teachers shows a stronger relationship to pupil achievement than other school characteristics.²⁹

A similar conclusion was reached by Burkhead who examined high schools in Chicago and Atlanta and found relationships between teacher characteristics and school outputs.³⁰

Tetley reported the findings of a study among grade four, five and six children in a large school district in Alberta. She concluded that teachers with more training tend to be more effective in inducing reading achievement among grade four pupils. However, the length of the teacher's training was found to be less significant than the type and recency of training.³¹

Cheal's study suggests that the qualifications of elementary teachers have a greater effect on retention of pupils in Canadian schools than do the qualifications of

²⁹James S. Coleman et al., Equality of Educational Opportunity, U.S. Department of Health, Education and Welfare (Washington, D.C., 1966), p. 21.

³⁰Burkhead, loc. cit.

³¹Dorothy F. Tetley, "The Relationship of Certain Teacher Characteristics to Pupil Achievement in Reading" (unpublished Master's thesis, University of Alberta, 1964).

secondary teachers.³² This is to infer that those pupils who have better qualified teachers in the elementary school tend to achieve more and stay in school longer. Cheal concludes that "those provinces giving greatest emphasis to the quality of their elementary teachers would seem to be receiving the greatest return on their investment."³³

Hypothesis XIII

H₁₃: There will be a positive relationship between teacher's qualifications and pupil's score on reading vocabulary.

Hypothesis XIV

H₁₄: There will be a positive relationship between teacher's qualifications and pupil's score on reading comprehension.

Effects of Size of School

In the literature reviewed, very few researchers specifically attempted to relate the size of the school to reading achievement. Rather, most studies were

³²John E. Cheal, Investment in Canadian Youth: An Analysis of Input-Output Differences Among Canadian Provincial School Systems (Toronto: McMillan, 1963), p. 66.

³³Ibid.

concerned with comparisons between the reading achievement of urban and rural students. This implies, however, a comparison between large and small schools since large schools are usually found in urban areas and the smaller schools in the rural areas.

Dunphy reported highly significant differences in reading achievement between rural and urban students in Newfoundland. Although both groups scored lower than the American children used in the test norms, children from larger schools in urban areas on the Avalon Peninsula scored closer to the norms supplied by the test.³⁴

After a survey of reading achievement among Grade Eight students in Newfoundland, Sullivan reported to the Royal Commission on Education and Youth that there seemed a tendency for the better readers to come from the larger schools.³⁵ He also stated that, "Regional and central high schools outside St. John's produced higher mean scores on reading comprehension than did all grade schools

³⁴Sister Hildegard Dunphy, "A Comparison of Reading Achievement of Sixth Grade Urban and Non-Urban Pupils" (unpublished Master's thesis, The Catholic University of America, Washington, D.C., 1957).

³⁵Province of Newfoundland and Labrador, Report of the Royal Commission on Education and Youth, Vol. I (St. John's: The Queen's Printer, 1967), pp. 38-43.

of a comparable size."³⁶

This implies that the size of the school may not be an important variable relating to reading achievement within an urban area. Rather, the significant relationships reported in the literature seem to be concerned with certain other factors that would enter into comparisons between urban and rural schools, and which are not the concern of the present study.

This view was substantiated by Burkhead who reported that the size of the school was not an important variable when schools in large cities and smaller communities in the United States were analysed separately in the study.³⁷

Hypothesis XV

H₁₅: There will be no significant relationship between the size of the school and pupil's reading vocabulary.

Hypothesis XVI

H₁₆: There will be no significant relationship between the size of the school and pupil's reading comprehension.

³⁶Ibid.

³⁷Burkhead, op. cit., p. 51.

The literature reviewed in this section suggests that teachers' qualifications contribute significantly to pupils' reading achievement. The size of the school, however, does not appear to be related to reading achievement when comparisons are made within the range of variation that exists in an urban area.

IV. SOCIOECONOMIC VERSUS EDUCATIONAL INPUTS

This section considers the main question of the study, the relative influence of socio-economic and educational inputs on reading achievement. The hypotheses are established that the socio-economic variables will be more related to reading achievement than will educational inputs.

That a definite relationship exists between reading achievement and certain factors in the child's home environment is a conclusion supported by the findings of many researchers.³⁸

That variations in certain school characteristics, especially the quality of teachers, are related to reading achievement has likewise been supported by research.³⁹

³⁸See, for example, the research cited in Section II of this chapter.

³⁹See, for example, the research cited in Section III of this chapter.

However, except for a few studies conducted on a national or on a large regional basis and considering such broad output variables as retardation and retention in school, very few investigations have been concerned with the relative impact of socio-economic and educational inputs on reading achievement.

Coleman (1940) found that higher socio-economic groups scored higher in all subject areas and this researcher suggested that, "From groups representing extremes in socio-economic status, one seems justified in looking for differences in achievement in reading."⁴⁰ He questioned, however, whether superior achievement is the result of socio-economic status or of intelligence.⁴¹

The interrelationship between intelligence, socio-economic status and achievement was noted by Curry. This author concluded that the scholastic achievement of highly intelligent sixth-grade pupils does not seem to be affected by socio-economic status. He states, "High intellectual ability offsets any deficiency which may be

⁴⁰H.A. Coleman, "Relationship of Socio-Economic Status to the Performance of Junior High School Pupils" Journal of Experimental Education, No. 9 (1940), p. 61.

⁴¹ Ibid.

created by lower social and economic conditions."⁴²

A study by Burkhead, referred to earlier in this chapter, investigated the relative effects of certain educational and socio-economic inputs on achievement scores of high school pupils in two large cities of the United States. This authority reported that the in-school variables such as teachers' qualifications and experience, size of school and age of school buildings were relatively unimportant when compared with certain out-of-school variables which reflected the child's home environment. This author concluded that socio-economic factors were the important determinants of variations in school output in large-city schools.⁴³ A similar conclusion was reached when Burkhead examined small-community high schools in the same study. He reported that, although other variables became more important in the smaller communities, "In the final analysis community income continues to be the most important influence on educational outcomes."⁴⁴

A recent study by Coleman examined the effects of a number of school and socio-economic factors on a national

⁴²Curry, loc. cit.

⁴³Burkhead, op. cit., p. 48.

⁴⁴Ibid., p. 85.

sample of elementary and high school pupils in the United States. In the comprehensive report which followed this research the author concluded that the between-school variation in achievement showed very little association with teacher quality or size of school, but instead was associated with the average socio-economic level of students.⁴⁵

This conclusion is substantiated by Kitchen who reported that for Newfoundland the crux of the problem of low educational productivity has to do with low incomes, large families, and illiterate home environment, rather than with such educational inputs as the quality of teachers. Kitchen found that among Newfoundland census divisions the correlation between per-pupil expenditure on teachers' salaries and grade eight pupils retarded one year or more was .23, whereas the correlation between children per family and grade eight pupils retarded one year or more was .85. While the correlation between the per cent of teachers with two years training or less and grade seven pupils retarded one year or more was .37, that between per cent of population illiterate and grade seven pupils retarded one year or more was .89.⁴⁶ In this study

⁴⁵James Coleman, loc. cit.

⁴⁶Kitchen, op. cit., pp. 26-29.

all of the correlations between the demographic and socio-economic factors and pupil achievement were higher than the correlations between the educational inputs and productivity. Kitchen states:

It seems that the educational problems of the Atlantic region are rooted importantly in the culture and the family structure of the region ... and ... a program restricted to tinkering with levels of financial support to education is apt to be relatively ineffective. ⁴⁷

The literature reviewed in this section suggests that certain socio-economic factors are closely related to pupil achievement. There is some evidence that the socio-economic variables are more significant than the educational variables in their influence on achievement in school. Consequently, the major hypothesis of this study considers socio-economic versus educational variables as related to achievement in reading.

Hypothesis XVII

H₁₇: Socio-economic variables will be more closely related to reading vocabulary than will educational variables.

⁴⁷Ibid., p. 40.

Hypothesis XVIII

H₁₈: Socio-economic variables will be more closely related to reading comprehension than will educational variables.

IV. SUMMARY

Section I of this chapter dealt with the expected relationship between intelligence and reading achievement. Research findings indicated that there would be a significant positive relationship between the two variables.

Section II dealt with research findings to support the relationship between five socio-economic variables - father's occupation, mother's education, reading material in the home, size of family and pupil absenteeism - and reading achievement. The literature reviewed suggested a significant relationship could be hypothesized between each of the five socio-economic variables and reading achievement.

Section III dealt with research findings relating to the variables of teacher's qualifications and size of school. From these findings it was hypothesized that the qualifications of the teacher would affect reading achievement, but the size of the school would not.

Literature to support the main hypothesis was presented in Section IV. Research findings suggested that reading achievement would be determined more by socio-economic factors than by educational factors.

CHAPTER III

RESEARCH DESIGN

This chapter sets forth the methods used to conduct the study. It describes in detail the sample, the instruments, and the procedures used to collect, to process and to analyze the data.

I. BACKGROUND OF THE STUDY

This study was carried out in St. John's, at the same time that three other graduate students conducted similar investigations in a rural area of the province.¹

The Area Selected

In the selection of the area to be studied St. John's being the largest city in the province provided the greatest contrast with the rural area being investigated by the other students. Moreover, the pupil population

¹Hector A. Pollard, "Sociological Versus Educational Inputs as Related to Grade Six Reading Achievement in Rural Newfoundland" and Raftus C. Noel, "Sociological Versus Educational Variables as Related to Grade Six Arithmetic Achievement in Rural Newfoundland." (unpublished Master's theses, Memorial University of Newfoundland, St. John's, 1970); Stuart Ralph, "Sociological Versus Educational Variables as Related to Grade Six Language Achievement in Rural Newfoundland." (Master's thesis in process, Memorial University of Newfoundland, St. John's).

proved a sufficiently large sample and the school board was willing to co-operate in the project.

Schools outside the city limits were not included in the study even though several of the schools were under the jurisdiction of the same school board. These schools were considered to be more representative of a rural rather than an urban environment.

The Religious Denomination Selected

In Newfoundland, at the time of this study, schools were divided on the basis of the five major religious denominations. The sample population for the study was selected from pupils attending Roman Catholic schools. Schools of this religious denomination enrolled 59 per cent of the school population in the urban area being studied and approximately 40 per cent of the total school population in the province.

Time did not permit the researcher to carry out the study in the large number of schools under the jurisdiction of the five school boards in the area. At the same time, the fourth grade pupil population in Roman Catholic schools would provide a sufficiently large sample. Thus the sample was selected from schools under the jurisdiction of the largest school board in the area.

The Grade and Sex Selected

Grade four pupils were chosen as the subjects of the study because by grade four both sociological and educational inputs have affected pupil achievement. By the end of grade four children should have acquired the basic skills necessary to independent reading and such educational variables as teacher's qualifications have had an opportunity to maximize their effects on pupil's reading. After grade four much less formal instruction is given in the basic reading skills. Moreover, children of this age were equipped with the reading skills necessary to handle the standardized tests used in the investigation.

Previous experience and a review of the literature suggested that in the early elementary grades girls progress more rapidly in reading than boys in the same grade. Pauley's research, based on a large school district in the United States, found that boys were three months behind girls in reading in the lower elementary grades, and 68.5 per cent of pupils in special reading classes were boys.²

²Frank R. Pauley, "Sex Differences and Legal School Entrance Age," Journal of Educational Research, Vol. 48 (June-September, 1954-55), pp. 1-9.

A more recent study carried out by Mazurkiewicz supports this view. He reports that, "Boys outnumber girls by a four to one ratio in the retarded reading population."³

Because of the wide differences in reading achievement between the sexes and the impracticality of collecting and analyzing the data separately, it was decided that boys would be the subject of this study.

The Procedure

In February, 1968, a letter was sent to the Chairman of the Roman Catholic Board for St. John's explaining the nature and purpose of the study. A facsimile of this letter is contained in Appendix A.

Permission was given the researcher to work in the schools and in March, 1968, the various principals were contacted. In April the researcher visited the schools concerned and selected the pupils who were to be involved in the study, according to the random selection method described below. At this time, too, the testing program and the parent questionnaire were discussed with the

³Albert J. Mazurkiewicz, "Social Cultural Influences and Reading," Journal of Developmental Reading, Vol. 3 (September-June, 1960-61), p. 254.

principals and teachers concerned and a tentative testing schedule arranged.

II. THE SAMPLES

Teacher Sample

Records at the school board office showed that as of December 31, 1967, there were thirty-six classes of fourth grade children registered in seventeen Roman Catholic schools in the St. John's area. Four of the schools enrolled only girls so that four schools and eleven fourth grade classes were excluded from the study.

Fourth grade boys were registered in twenty-five classes at thirteen schools. The records at the school board office revealed that the qualifications of the twenty-five teachers in those classes ranged from B licence to a grade four teaching certificate.

Pupil Sample

The total fourth grade enrolment in the thirteen schools under study was 726, according to the March 31, 1968, monthly returns recorded at the school board office.

The original sample for the present study consisted of 350 boys selected randomly from twenty-five classes in thirteen schools. Selection of pupils for the

sample was made by using a table of random numbers. Schools were listed alphabetically according to the name of the school; and, fourth grade classes within each school were arranged alphabetically according to the teacher's surname. In this order, a number ranging from 1-726 was assigned to each pupil on a classroom register, and the 350 random selections were made.

Upon further investigation, however, it was found that seven of the pupils selected came from a nearby orphanage and had to be excluded from the sample because the necessary information on home background could not be obtained. Also excluded were thirteen pupils who were absent for one or more of the standardized tests. Thus, 330 pupils wrote the full battery of tests and were given the parent questionnaire to take home.⁴

Of this number, a further twenty-five had to be excluded from the study -- seven questionnaires which were not returned and eighteen returned incomplete. (Actually, thirty-five were returned incomplete but by consulting the city directory the researcher was able to record the missing occupational information).

Thus, the final pupil sample for analysis consisted of 305 boys.

⁴See Appendix B.

Parent Sample

The original parent sample consisted of the parents or guardians of the 330 pupils who wrote the complete battery of standardized tests. As indicated above, only 305 or ninety-three per cent of the original 330 parents could be included in the analysis using the available computer services.

The final samples consisted of 305 parents, 305 pupils, and twenty-five teachers in thirteen schools under the jurisdiction of one religious denomination in St. John's.

III. THE INSTRUMENTS

Five instruments were used to collect the data for this study: a school questionnaire, a parent questionnaire, a verbal intelligence test, a nonverbal intelligence test and a reading test. Each instrument is discussed in detail below.

School Questionnaire

The school questionnaire was designed to obtain information on the qualifications of the teacher, the number of grade four classes in each school, and the number of days each pupil in the sample was absent between September 6, 1967 and April 30, 1968.

Because of the small number of schools in the sample, information on the school questionnaire was completed by the researcher. Data on teacher's qualifications and the number of grade four classes in each school was obtained from records at the school board office. This information was checked with the teachers and principals and was found to be accurate. Data on pupil's absenteeism was taken from the class register at the time of testing.

A copy of this questionnaire is contained in Appendix C.

Parent Questionnaire

Each pupil in the sample was given a copy of the questionnaire shown in Appendix B to be taken home for completion by one of his parents. The following information was requested: father's usual occupation; mother's education; whether or not the family bought a newspaper regularly; and, the number of children in the family eighteen years or under who were living at home.

Where possible, the information on the completed questionnaires was verified from school records and by the classroom teachers. The 1966 and 1967 city directories were also used to verify information on father's occupation.

Intelligence Tests

The Lorge Thorndike Intelligence Tests Form 3 AV and Form 3 ANV were used in this study. Form 3 AV is a verbal battery of five subtests and required thirty-two minutes of working time. Form 3 ANV is a non-verbal battery of three subtests and required twenty-seven minutes of working time.

The I.Q.'s obtained from these tests are described as "deviation I.Q.'s" so designed that the score obtained has the same mean and standard deviation at each age level so that the I.Q. has the same meaning in terms of standing within the basic norming group. The mean for the test was set at 100 and the standard deviation at 16.⁵

In a review of the Lorge Thorndike Intelligence Tests Freeman, a psychology professor at Cornell University, describes it as being "among the best group tests available from the point of view of the psychological constructs upon which it is based and that of statistical significance."⁶ In the same source, another psychologist, P.A. Pigeon of

⁵Irving Lorge and Robert L. Thorndike, The Lorge Thorndike Intelligence Tests Technical Manual (Boston: Houghton Mifflin Company, 1962), p. 19.

⁶Oscar K. Buros, The Fifth Mental Measurement Yearbook (New Jersey: The Gryphon Press, 1960), p. 479.

the National Federation of Educational Research in Great Britain, highly recommends the tests:

This is an excellent series of tests well designed and well constructed, admirably printed and presented and equipped with highly satisfactory norms. It can also be said that the tests provide reliable measures of verbal and non-verbal reasoning. ⁷

Reliability coefficients are given as .896 for the verbal part and .814 for the nonverbal part of the test. The odd-even reliability coefficients were reported to be .94 and the stability coefficients .58 for each battery of the test at the level used in this study. ⁸

The statistical validity of The Lorge Thorndike Intelligence Tests (LTIT) has been well established as a result of studies measuring their relationship with other criteria such as the Iowa Test of Basic Skills (ITBS), The California Achievement Test and the Stanford Intermediate, and also with other intelligence tests such as the Otis and the California Mental Maturity. For example, The Lorge Thorndike Intelligence Tests Form 3AV correlated .84 and Form 3 ANV .68 with the composite scores on the Iowa Test of Basic Skills. Correlations

⁷Ibid., p. 481.

⁸Lorge and Thorndike, op. cit., pp. 9-10.

between the LTIT and subtests on the ITBS were reported as follows: .79 for reading vocabulary and .78 for reading comprehension when the verbal battery of LTIT was used with 344 fourth grade children in the United States and, .60 and .58 respectively with the nonverbal battery of the intelligence test.⁹

For the purpose of the present study both batteries of the test were administered to pupils because it is difficult to find a measure of intelligence in the early grades. In the first three grades nonverbal tests only are generally used but authorities believe that in grade four scores on both batteries should be examined to obtain a more reliable measure. Sullivan and Rowe put it this way:

Test scores which are obtained from pupils in the lower grades should be supplemented by scores obtained from a verbal test given as soon as possible after the student has reached Grade IV.¹⁰

From an examination of the data obtained, however, it was considered that scores obtained from the verbal test were sufficient for the purposes of the present study. The verbal and nonverbal tests correlated at .65 with each other and the verbal test correlated at .90 with the

⁹Ibid., p. 16.

¹⁰A.M. Sullivan and E.J. Rowe, "The Measurement of Intelligence in Newfoundland," NTA Journal, (April, 1967), p. 61.

combined score, so that there is very much in common between what is being measured in the two tests. Thus, for the purposes of analysis only the verbal scores were used. Both scores, however, are reported in the descriptive analysis in Chapter IV.

Kneif and Stroud analyzed the inter-relationships between various intelligence and achievement tests and reported that the verbal battery of the LTIT is sufficient for general prediction purposes. They could find little justification for the use of the nonverbal battery in conjunction with the verbal test.¹¹

Reading Test

The Nelson Reading Test 1962 Revised Edition, Form A, was used as a measure of reading achievement, and the raw scores on the Vocabulary subtest and the Paragraph Comprehension subtest were used as the dependent variables in this study.

The Vocabulary subtest consists of one hundred items and requires ten minutes of working time.

¹¹Lotus M. Kneif and James Stroud, "Inter-correlations Among Various Achievement, and Social Class Scores," Journal of Educational Psychology, Vol. 50, No. 3 (1959), pp. 117-120.

The Paragraph Comprehension subtest is made up of seventy-five items and claims to measure three important reading skills: reading for main ideas, reading for details, and reading to predict outcomes. The working time for the Paragraph Comprehension subtest was twenty minutes.

To obtain evidence of the congruent validity of The Nelson Reading Test (TNRS) the authors report that it was administered in conjunction with the Iowa Test of Basic Skills (ITBS). Pearson moment correlations were computed between the vocabulary scores on TNRT and the vocabulary scores on the ITBS (.70 for grade four), and also between TNRT paragraph scores and ITBS reading subtest scores (.62 for grade four). Corresponding correlations between TNRT and The Henmon Nelson were .76 and .70.¹²

In reviewing the test H. Alan Robinson contends that The Nelson Reading Test is an effective measure of reading achievement. He further states that the standardization procedure was meticulous and comprehensive.

¹²M.J. Nelson, The Nelson Reading Test Examiner's Manual (Boston: Houghton Mifflin Company, 1962), p. 20-21.

The reviewer points to some flaws in the test and stresses the fact that the author of the test intended it to be used as a gross measure of reading achievement and not as a diagnostic instrument.¹³

Hence, for the purpose of the present study the test appears to be adequate.

As a further attempt at validation The Nelson Reading Test was administered to two classes of grade four children in a school outside the St. John's metropolitan area, in February, 1968. The mean total reading raw score for the combined group was 46, corresponding to a grade equivalent of 4.4 according to the table of norms. The corresponding grade equivalent for pupils in the standardization sample was 4.6.¹⁴ The researcher was satisfied that fourth grade pupils in the area under study experienced no difficulty with the mechanics of the test and that scores approximated the test norms.

¹³Oscar K. Buros (ed.), The Sixth Mental Measurement Yearbook (New Jersey: The Gryphon Press, 1965), p. 1082.

¹⁴Nelson, op. cit., p. 17.

IV. COLLECTING DATA

The tests were administered by the researcher in May and June, 1968. Pupils wrote all tests in the schools they attended.

The testing schedule was arranged so that all pupils wrote The Lorge Thorndike Intelligence Tests (LTIT) in the morning and The Nelson Reading Test in the afternoon of another day. In all cases the verbal section of the LTIT was administered before the morning recess and the nonverbal section of LTIT was given after the recess period. Pupils were tested in groups of fifteen to twenty-five depending on the number in the sample at each school. Because of limited space, however, in some cases the researcher had to administer the test to the whole fourth grade class in order to obtain data on the pupils who were included in the sample.

In early June a copy of the parent questionnaire was left with each of the 330 pupils who wrote the complete battery of tests. It was requested that this be returned as soon as possible. In some cases, however, the researcher made several visits to schools in order to collect the questionnaires and thirty parents had to be contacted by telephone. As indicated earlier, seven questionnaires were not returned and eighteen others did

not contain complete data. Hence, the questionnaires yielded complete information on mother's education, father's occupation, reading material in the home and number of children in the family for 305 of the 330 pupils who wrote all of the tests.

The school questionnaire was filled in by the researcher. Data on teachers' qualifications and size of school was obtained from records at the school board office. Data on absenteeism was taken from the classroom register during the first testing session. Even though information on teachers' qualifications, size of school and absenteeism was obtained for all 343 pupils in the original sample only the 305 pupils on whom complete information was obtained, as referred to in the preceding paragraph, will be included in the analysis of school inputs.

To convert scores on the Lorge Thorndike Intelligence Tests the so-called "deviation I.Q." obtained from a table furnished by the authors was used. These I.Q.'s have a mean of 100 and a standard deviation of 16.¹⁵ I.B.M. 805 separate answer sheets were used and

¹⁵Lorge and Thorndike, op. cit., p. 19.

tests were hand-scored using a scoring key supplied by the authors.

The answer sheets used with The Nelson Reading Test were self scoring and raw scores on each subtest were used as dependent variables.

The data from the parent and school questionnaires were tabulated using a point system of numerical values. This is described more fully in Chapter V and shown in Appendices D and E.

V. PROCESSING DATA

All data from questionnaires and tests were transferred to intermediate sheets, coded, and punched on I.B.M. cards. An example of the tabulation of these data is shown in Table I. The 1620 Computer at Memorial University processed the data as described below.

A descriptive analysis of the data is presented in Chapter IV. This section is intended to provide an overview of the data obtained on the pupils, parents and teachers in the sample.

The chief form of statistical analysis was correlation, presented in Chapter V.

Pearson product-moment correlation coefficients were calculated between each measure of reading achievement

TABLE I

TABULATION OF DATA FROM TESTS AND QUESTIONNAIRES

Pupil's Computer Number	I.Q. Verbal	I.Q. Non Verbal	Vocab- ulary	Compre- hension	Size of Family	Days Absent	Mother's Education	Father's Occupation	Teacher's Qualifications	Size of School	News- papers
020	148	108	57	40	07	040	14	677	8	2	3
195	097	096	25	18	05	175	09	570	8	2	3
305	081	069	28	18	07	150	10	424	5	6	3

Note: For Days Absent and Father's Occupation scores have been multiplied by 10
to clear decimals.

and each predictor variable. The predictor variables comprised intelligence, two educational factors and five socio-economic factors. Reading vocabulary and reading comprehension were the two measures of reading achievement.

A correlation matrix was prepared and coefficients of correlation were tested for significance at the .05 level. The minor hypotheses were tested by comparing correlation coefficients both with and without intelligence partialled out.

Three procedures were used to test the major hypotheses of the study. First, for both reading vocabulary and reading comprehension, the size of the correlation coefficients with the socio-economic variables was compared with the size of the correlation coefficients with the educational variables. Secondly, these comparisons were made with intelligence partialled out. Thirdly, multiple correlation coefficients were computed, and the size of the multiple R for the group of educational variables was compared with that for the socio-economic variables. The comparisons of multiple correlations were interpreted in terms of R^2 ; that is, according to Ferguson, "the proportion of variance is one variable, that is associated with two or more independent

variables combined with the regression weights used."¹⁶

An F ratio was calculated to determine whether the multiple correlation coefficients were significantly different from zero.¹⁷

¹⁶George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw Hill, 1966), p. 401.

¹⁷Ibid., pp. 248-249.

CHAPTER IV

DESCRIPTIVE ANALYSIS

This chapter describes the distribution of pupils classified by each of the several variables used in the study. Classification will follow the same pattern used in presenting the hypotheses in Chapter II, that is by intelligence, father's occupation, mother's education, reading material in the home, size of family, absenteeism, teacher's qualifications and size of school. The dependent variables, reading vocabulary and reading comprehension, are shown at the end of the chapter. The testing of hypotheses is deferred until the next chapter.

I. INTRODUCTION

As reported in Chapter III, 330 pupils in twenty-five classrooms wrote the reading and intelligence tests. However, complete information on all variables was obtained for 305 pupils and only those pupils on whom complete data was obtained could be included in the analysis, using available computer services. Thus, each section of the present chapter reports data on 305 pupils. The original sample consisted of 350 boys selected

randomly from the 726 boys in the area at the time of the study.

II. INTELLIGENCE

In Table II pupils are classified according to the deviation I.Q. scores obtained on the verbal and non-verbal sections of The Lorge Thorndike Intelligence Tests (LTIT). The table indicates no difference in the mean or median I.Q.'s on each test.

The means, medians and standard deviations on both tests compared favorably with those of U.S. pupils comprising the norming population. Scores from the present study corresponded to those of American pupils in average socio-economic communities.¹

In comparison with grade six pupils in Trinity Bay, boys in this study scored higher. Pollard reported the mean I.Q. of grade six boys on the verbal test in that rural area to be .92, eight points below their urban

¹The norming population consisted of 136,000 children in 22 American States, from a random sample of 44 communities stratified according to socio-economic criteria. See Irving Lorge and Robert L. Thorndike, The Lorge Thorndike Intelligence Tests Technical Manual, pp. 5-7.

TABLE II

PUPILS CLASSIFIED BY INTELLIGENCE

Class Interval I.Q.'s.	LTIT-Verbal		LTIT-Nonverbal		Normal Distribution
	Number	Per Cent	Number	Per Cent	Per Cent
130 and over	11	3.6	7	2.3	3.0
120-129	29	9.5	17	5.6	7.6
110-119	41	13.4	49	16.1	16.0
100-109	77	25.2	85	27.9	23.4
90-99	74	24.3	78	25.6	23.4
80-89	45	14.8	46	15.1	16.0
70-79	17	5.6	16	5.1	7.6
Below 69	11	3.6	7	2.3	3.0
Total	<u>305</u>	<u>100.0</u>	<u>305</u>	<u>100.0</u>	<u>100.0</u>
Median		101		100	100
Mean		100		100	100
S.D.		16		15	16

counterparts.² This difference between rural and urban pupils is consistent with findings from other studies. Sullivan and Rowe reported the mean I.Q. on the Otis test, of pupils in grades five to eight, to be 104.4 for pupils in St. John's schools and 92.4 for pupils from schools in rural settlements on the Avalon Peninsula. In a discussion of verbal intelligence tests the authors said:

It would be expected that the average scores obtained by subjects in the more urban areas of Newfoundland would approximate the norms on these tests, but that the average scores obtained by subjects from a rural area would be considerably lower than the published test norms.³

Thus, the findings of the present studies⁴ further confirm the expectations of those authorities who have been concerned with the measurement of intelligence in

²Hector A. Pollard, "Sociological Versus Educational Inputs as Related to Reading Achievement in Rural Newfoundland" (unpublished Master's thesis, Memorial University of Newfoundland, St. John's, 1970), pp. 52-53.

³Arthur M. Sullivan and Edward J. Rowe, "The Measurement of Intelligence in Newfoundland," NTA Journal (April, 1967), pp. 58-63.

⁴See also, Pollard, op. cit. and, Raftus C. Noel, "Socio-Economic Versus Educational Inputs as Related to Arithmetic Achievement in Rural Newfoundland" (unpublished Master's thesis, Memorial University of Newfoundland, St. John's, 1970).

rural and urban areas of Newfoundland.⁵

III. FATHER'S OCCUPATION

Occupations of the fathers of pupils in the study were coded using the Blishen scale. This index assigns a numerical value to each of 343 occupations. Scores are based on income and years of schooling required for each occupation, nationally, according to the 1951 Census.⁶ Table III classifies pupils according to the seven occupational categories used by Blishen.

As the table indicates almost one-third of the children have fathers whose occupational status is class five, the skilled trades category. Twenty-five per cent of the fathers are in professional and managerial positions. However, the majority (70 per cent) of pupils come from homes where the principal wage-earner is employed as a skilled or unskilled tradesman, ranked in the three lower categories of the scale.

⁵Sullivan, *loc. cit.* Two related studies cited in the Sullivan article are: A. Burnett, "Assessment of Intelligence in a Restricted Environment (unpublished Ph.D. thesis, McGill University, 1955) and, A.M. Sullivan, "The Measurement of Intelligence in Different Environments" (unpublished Master's thesis, Dalhousie University, 1956).

⁶For a more detailed description see, B.R. Blishen, "The Construction and Use of an Occupational Class Scale," *Canadian Journal of Economics and Political Science*, Vol. 24, No. 4 (November, 1958), p. 523.

TABLE III
OCCUPATIONS OF FATHERS OF URBAN AND RURAL PUPILS CLASSIFIED BY
BLISHEN CATEGORIES AND COMPARED WITH FIGURES FOR ALL NEWFOUNDLAND

<u>Class</u>	<u>Urban</u>		<u>Rural</u>	<u>All Newfoundland</u>
	Number	Per cent	Per cent	Per cent
1	7	2	.4	8.5
2	47	15	5.4	7.5
3	23	8	1.0	6.8
4	16	5	2.4	8.5
5	101	33	14.7	18.2
6	51	17	31.4	26.7
7	60	20	44.7	20.4
Not stated				3.4
Total	<u>305</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Note: Urban refers to the subjects of the present study, rural to the subjects of the Pollard study, and All Newfoundland to data adapted from the 1961 Census. 9

On the basis of figures for all Newfoundland found in the 1961 Census and reported in Table III the percentages in the sample compare favorably. The proportion of fathers in the first four classes for the whole province is almost the same as in the sample. In St. John's fewer fathers were ranked in the two lowest categories, thirty-seven per cent as compared with forty-seven per cent for all of Newfoundland. On the other hand, thirty-three per cent of fathers in the sample belong to the skilled trades category as compared with eighteen per cent on a provincial basis.

Also found in Table III are comparison figures reported by Pollard and based on his research in a rural Newfoundland area.⁷ This researcher found that ninety per cent of pupils in Trinity Bay came from homes where the fathers ranked in the three lowest categories on the Blishen scale and only seven per cent belonged to the professional and managerial classes. This suggests that pupils in St. John's have an "advantage" over their rural counterparts in Newfoundland as far as the socio-economic level of their family is concerned.

⁷Pollard, op. cit., pp. 50-51.

IV. MOTHER'S EDUCATION

In Table IV pupils are classified according to education of their mothers. The number of years attendance at an institution of formal learning was used as an indicator of mother's education and the information was ranked using a twenty point scale as shown in Appendix E.

The table shows that the median number of years of schooling for mothers in the sample was 9.3. Sixty-one per cent of the mothers had some formal schooling beyond the elementary grades and more than one-fifth had attended an institution of higher learning. Of this latter group most (eleven per cent) had attended school for only one year beyond grade eleven. From an examination of the data it was found that this group consisted mainly of stenographers and teachers with one year of professional training. The eight per cent who reported fourteen and fifteen years of formal schooling were, for the most part, nurses and university graduates.

The mothers of approximately forty per cent of pupils in the sample, however, had eight years or less of formal schooling. Of this group, seven per cent could be classed as illiterate or functionally illiterate, that is, with no more than a grade four education.

TABLE IV
PUPILS CLASSIFIED ACCORDING TO MOTHER'S EDUCATION

Years of Schooling	Number of Pupils	Per cent of Pupils	Cumulative Per cent
0	0	.0	.0
1	1	.4	.4
2	3	1.0	1.4
3	8	2.6	4.0
4	10	3.3	7.3
5	13	4.3	11.6
6	21	6.9	18.5
7	27	8.8	27.3
8	35	11.5	38.8
9	45	14.8	53.6
10	46	15.1	68.7
11	30	9.8	78.5
12	34	11.1	89.6
13	3	1.0	90.6
14	12	3.9	94.5
15	12	3.9	98.4
16	3	1.0	99.4
17	1	0.3	99.7
18	0	0.0	99.7
19	1	0.3	100.0
20	0	0.0	100.0
Total	<u>305</u>	<u>100.0</u>	<u>100.0</u>
Mean	9.2		
Median	9.3		

Illiteracy and functional illiteracy is much less prevalent among mothers in the sample than among the general population in Newfoundland. The majority of the mothers of fourth grade children would have been listed in the 1961 Census in the age group 25-44. Kitchen reported that for all of Newfoundland, 12.8 per cent of the population, male and female in the 25-34 age group and 25.4 per cent of those in the 35-44 age group, have less than five years of formal schooling. For St. John's, however, the corresponding percentages for those two age groups were reported by Kitchen as 3.2 and 6.3 respectively, as compared with 7.2 per cent in the present study.⁸

V. READING MATERIAL AT HOME

The assumption is made here that subscribing to a newspaper regularly provides some measure of the importance accorded reading by the inmates of a particular household. For this reason parents were asked to indicate whether or not a newspaper was usually available in the home. A numerical value was assigned to the responses received according to the manner reported in the table below.

⁸H.W. Kitchen, "A Preliminary Study of Demographic and Socio-Economic Factors in The Atlantic Provinces and Their Relationship to Measures of Educational Output" (Mimeographed; St. John's, October, 1967), pp. 6-7.

TABLE V
FAMILIES CLASSIFIED ACCORDING TO NEWSPAPERS
AVAILABLE IN THEIR HOMES

	Point Value	Number of Families	Per cent of Families
No newspaper	1	46	15.1
Weekly newspaper	2	69	22.6
Daily newspaper	3	190	62.3
Total		<u>305</u>	<u>100.0</u>

Table V shows that the majority of families in the sample were recipients of a newspaper at least once a week. Only fifteen per cent of the parents reported that they never received a newspaper.

There were two daily publications in the area under study. No attempt was made in this study to find out if parents subscribed to more than one newspaper or to papers other than those published in the province.

Crocker, after a careful investigation of reading material available in the homes of Newfoundland high school pupils, reported that seventy-seven per cent of homes in the study received at least one newspaper and less than twenty per cent subscribed to no newspaper.⁹

VI. SIZE OF FAMILY

In Table VI pupils are classified according to the number of children in the family. Only children under eighteen years of age and living at home were included. As the table indicates, families ranged in size from one to twelve children with the median family size being 5.2.

⁹O.K. Crocker, "The Leisure Reading of High School Students in Newfoundland" (unpublished Doctoral dissertation, Indiana University, 1967), pp. 213-214.

TABLE VI

PUPILS CLASSIFIED ACCORDING TO THE
NUMBER OF CHILDREN IN THE FAMILY

Size of Family	Number of Pupils	Per cent of Pupils
1	15	4.9
2	19	6.2
3	32	10.5
4	52	17.1
5	51	16.7
6	30	9.9
7	43	14.1
8	30	9.9
9	19	6.2
10	9	2.9
11	4	1.3
12	1	.3
Total	<u>305</u>	<u>100.0</u>
Mean	5.4	
Median	5.2	

More than sixty per cent of the pupils came from families where there were five or more children living at home. Only about eleven per cent of pupils came from homes where there were one or two children. The median of 5.2 was twice as large as the provincial average of 2.7 and almost three times as large as the national average of 1.9.¹⁰

The low correlation between family size and father's occupation, .08 as reported in Chapter V, would suggest that there was very little relationship between the two measures of socio-economic status. Table VII indicates, however, that there is a tendency towards larger families among the lower socio-economic classes. The table shows that fathers who are at the three lower levels of the occupational scale have slightly larger families than those in the four top classes. For example, pupils from families whose fathers are ranked as Class 7 on the scale have .5 more children per family than those whose fathers belong to Class 1, and the corresponding difference between Class 5 and Class 1 is .6.

¹⁰According to the D.B.S. census data for 1961 the average Newfoundland family had 2.7 children and the average Canadian family had 1.9 children. This included families with no children, as well as those with no children attending school. It also included children of all ages. See Kitchen, op. cit., p. 12.

TABLE VII
SIZE OF FAMILY ACCORDING TO
FATHER'S OCCUPATIONAL STATUS

Father's Occupational Class	Number of Families	Mean Family Size
1	7	4.9
2	47	4.8
3	23	4.5
4	16	4.9
5	101	5.5
6	51	5.3
7	60	5.4
Families	<u>305</u>	<u>5.4</u>

The relationship is probably more important than either the table or the correlation figure would suggest because children from a large family at a low socio-economic level are deprived economically more than those from a similar size family when the father is in a professional or managerial position. The low correlation between the two variables as reported in Chapter V does not account for this variability in income based on the size of the family.

VII. ABSENTEEISM

In Table VIII pupils are classified according to the number of days they were absent from school from September 6, 1967, to April 30, 1968.

As the table indicates, ninety-seven per cent of the pupils were absent fewer than twenty-five days and forty-five per cent had fewer than five days absent. The average number of days absent was 7.7. The percentage of days in attendance for pupils in the sample was 94.9¹¹ as compared to 92.3 for all Newfoundland in 1965-66,¹² and

¹¹School had been open 153 days from September 6, 1967 to April 30, 1968, inclusive.

¹²Newfoundland Department of Education, Statistical Supplement to the Annual Report of the Department of Education for the School Year Ended June 30, 1966, p. 9.

TABLE VIII

PUPILS CLASSIFIED ACCORDING TO ABSENTEEISM

Class Interval (Days Absent)	Number of Pupils	Per cent of Pupils	Cumulative Per cent
30 or more	4	1.2	100.0
25-29.5	7	2.3	98.8
20-24.5	13	4.3	96.5
15-19.5	20	6.6	92.2
10-14.5	38	12.4	85.6
5.0-9.5	87	28.6	73.2
0-4.5	136	44.6	44.6
Total	<u>305</u>	<u>100.0</u>	
Mean	7.7		
Median	5.7		

92.6 in 1966-67.¹³

VIII. TEACHER'S QUALIFICATIONS

Teacher's qualifications were ranked on an eleven point scale as shown in Appendix D. The distribution of teachers according to teaching grade or license and the classification of pupils according to teacher's qualifications are presented in Table IX.

The table reveals that approximately sixty per cent of the pupils in the sample were taught by teachers who had only one year of professional training. Also this group of teachers constituted sixty per cent of the teacher sample.

As compared with the per cent of teachers in each category on a provincial basis a higher proportion of teachers in the sample held a grade one teaching certificate, sixty per cent as compared with 32.5 per cent of all teachers in the province at the time of the study. On the other hand, twenty-four per cent of teachers in the sample have four years of professional training as compared with 16.6 per cent for all teachers in the province. It should also be noted that only one teacher,

¹³Newfoundland Department of Education, Statistical Supplement to the Annual Report of the Department of Education for the School Year Ended June 30, 1967, p. 9.

TABLE IX

PUPILS CLASSIFIED ACCORDING TO TEACHER'S QUALIFICATIONS

Teacher's Qualifications (Point Value)	Number of Teachers	Per cent of Teachers	Number of Pupils	Per cent of Pupils
9	0	0	0	0.0
8	6	24.0	75	24.6
7	2	8.0	26	8.5
6	1	4.0	15	4.9
5	15	60.0	184	60.3
4	0	0.0	0	0.0
3	1	4.0	5	1.7
2	0	0.0	0	0.0
1	0	0.0	0	0.0
Total	<u>25</u>	<u>100.0</u>	<u>305</u>	<u>100.0</u>

or four per cent of the sample, had less than one year of training whereas twenty-two per cent of Newfoundland teachers belonged in this category at the time of the study. A higher proportion of teachers with one or more years of professional training, ninety-six per cent as compared with seventy-two per cent on a province wide basis, would be expected in St. John's, since teachers tend to gravitate to urban areas. It would also be expected, however, that a larger proportion of teachers in the sample would be qualified beyond the one year teaching certificate.¹⁴

Although the teacher sample is very small, the evidence here suggests that the more highly qualified teachers are not teaching in the elementary schools in the area. Even though the majority of teachers held some teaching certificate, sixty per cent of this group had only one year of training and no teachers were qualified beyond grade four.¹⁵

¹⁴Supplement to the Annual Report of the Department of Education for the School Year Ended June 30, 1967, p. 9.

¹⁵Figures at the School Board office revealed that approximately fifty per cent of teachers employed by the Board in 1967-68 had one year of professional training and nine per cent had more than four years of training.

The report of Cheal, noted in Chapter II, should be recalled as it applies to this finding. Cheal concluded that the provinces which give the greatest emphasis to the quality of their elementary teachers seem to be receiving the greatest return on their investment.¹⁶ From the present study it would seem that in St. John's highly qualified teachers are not associated with the elementary schools.

As would be expected the percentage of pupils in each category in Table IX corresponds closely to the proportion of teachers in that category.

IX. SIZE OF SCHOOL

The number of grade four classes was used as an index of the size of school. Schools were ranked on a six-point scale according to the natural number that corresponded to the number of fourth grade classes. All children were taught in single grade groups.

Table X shows that thirty-six per cent of pupils in the study were taught in schools where there were two fourth grade classes. The majority of schools, however,

¹⁶J.E. Cheal, Investment in Canadian Youth: An Analysis of Input Output Differences Among Canadian Provincial School Systems (Toronto: The Macmillan Company of Canada Ltd., 1963), p. 66.

TABLE X
PUPILS CLASSIFIED ACCORDING TO
SIZE OF SCHOOL:

Size of School (Point Value)	Number of Schools	Per cent of Schools	Number of Pupils	Per cent of Pupils
1	6	46.2	73	24.0
2	5	38.4	109	35.7
3	1	7.7	33	10.8
4	0	0.0	0	0.0
5	0	0.0	0	0.0
6	1	7.7	90	29.5
Total	13	100.0	305	100.0

had one stream of fourth grade pupils. Since buildings housed pupils from kindergarten to grade eight it would seem that the size of the school ranged from nine to eighteen classrooms; generally, one or two streams at each grade level. It should be noted, however, that approximately one-third of the pupils in the sample were enrolled in one large school.

X. READING VOCABULARY

The vocabulary scores of pupils in the present study were slightly higher than the norms for the grade based on a randomly selected sample in the United States. In Table XI pupils are classified according to the raw scores obtained on the vocabulary test of The Nelson Reading Test and corresponding grade equivalents are given for each class interval.

The table shows that the median score for pupils in the study was 29.9, corresponding to a grade equivalent of 5.2. The expected median grade equivalent was 4.9 since pupils were tested in the ninth month of grade four. Thus, the average grade four pupil in St. John's was three months ahead of his American counterpart in reading vocabulary.

TABLE XI
PUPILS CLASSIFIED ACCORDING TO
READING VOCABULARY SCORES

Raw Score	Grade Equivalent	Number of Pupils
61-70	9.1-10.5	0
51-60	7.4-9.0	4
41-50	6.3-7.3	35
31-40	5.3-6.2	107
21-30	4.0-5.2	108
11-20	2.6-3.9	43
0-10	2.0-2.5	8
Total		<u>305</u>
Median (29.9)	5.2	
Mean	5.0	

The companion study conducted by Pollard, and referred to earlier, reports that the median reading vocabulary score on the same test for 746 sixth grade pupils in Trinity Bay was seven months below the American norm.¹⁷

The results of the present study appear more favorable than would be expected from the literature reviewed in Chapters I and II. It was noted there, however, that most of the research on reading in Newfoundland has been of a survey nature and only a few studies have attempted to make comparisons between the reading achievement of urban and rural pupils. However, Sullivan compared reading in urban and rural areas and states that, "Elementary schools in St. John's do not produce a higher level of achievement than do elementary schools outside St. John's except in the Vocabulary Test."¹⁸

¹⁷Pollard, op. cit., p. 67.

¹⁸ Province of Newfoundland and Labrador, Report of the Royal Commission on Education and Youth, Volume 1 (The Queen's Printer; St. John's, 1967), pp. 38-41.

XI. READING COMPREHENSION

Table XII shows the raw scores and grade equivalents obtained on the reading comprehension test by pupils in the sample. It can be seen from the table that pupils scored appreciably lower on this test than on the reading vocabulary test reported above. The median grade equivalent score of 4.0 is nine months below the expected norm of 4.9. Thus pupils in this sample were almost one year behind their American counterparts on the reading comprehension test of The Nelson Reading Test.

In comparison with rural children, pupils in St. John's scored only slightly higher. Using the same test Pollard reported that pupils in Trinity Bay scored 12 months below the American norms in reading comprehension as compared with the nine months retardation found in the present study.¹⁹

Without exception, the studies cited in the literature support the finding that urban students have very little advantage over their rural counterparts in reading comprehension. Also the research indicated that for both urban and rural areas of the province scores on

¹⁹ Pollard, op. cit., p. 67.

TABLE XII
PUPILS CLASSIFIED ACCORDING TO
READING COMPREHENSION SCORES

Raw Score	Grade Equivalent	Number of Pupils
51-60	9.9-10.5	2
41-50	8.0-9.7	3
31-40	5.7-7.8	37
21-30	4.1-5.6	109
11-20	2.5-4.0	129
0-10	2.0-2.4	25
Total		305
Median = 20.4		4.0
Mean = 21.0		4.1

reading comprehension are decidedly lower than reading vocabulary scores.²⁰

²⁰See, for example, Henley op. cit., News Letter (January, 1965), op. cit., and, Royal Commission, op. cit.

CHAPTER V

STATISTICAL ANALYSIS

This chapter tests the hypotheses of the study as established in Chapter II. The first three sections deal with the hypotheses specifying relationships between the various input variables and reading achievement. The fourth section deals with the major hypothesis, namely, that socio-economic variables are related more closely to reading achievement than are educational input variables. The .05 level of significance will be used throughout.

I. INTELLIGENCE

Hypotheses one and two predicted that positive relationships would be found between intelligence on the one hand and reading vocabulary and reading comprehension on the other. Pearson product-moment correlation coefficients are set forth in Table XIII. Both hypotheses were accepted. The correlation coefficients reported in the table between intelligence and reading vocabulary of .75 and .51 are statistically significant. The correlation coefficients of .70 and .42 for reading comprehension although smaller, are also statistically significant. It should be noted that the correlation coefficients between verbal intelligence and each measure of reading achievement

TABLE XIII

CORRELATIONS BETWEEN INTELLIGENCE AND READING ACHIEVEMENT

Intelligence Tests	N	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
Verbal	305	.75	.001	.70	.001
Nonverbal	305	.51	.001	.42	.001

Note: In all the tables of the present chapter, where N exceeds 100, an r of .16 is required for significance at the .05 level, .23 at the .01 level and .32 at the .001 level. See George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw Hill, 1966), p. 413.

are substantially higher than those between nonverbal intelligence and the predictor variables. Thus, verbal intelligence is the better predictor of reading achievement. Both sets of correlations, however, compare favorably with the studies reported in the description of the tests contained in Chapter III.

In subsequent analysis when the correlation coefficients reach or almost reach the .05 level of significance, hypotheses will be tested also with verbal intelligence partialled out. As supplemental data of some interest Tables XIV, and XV also report the effects of partialling out the nonverbal intelligence scores.

II. SOCIOECONOMIC VARIABLES

Hypotheses three to twelve predicted relationships between socio-economic variables and reading achievement. The results of the correlation analysis are set forth in Table XIV.

Father's Occupation

Hypotheses three and four predicted that positive relationships would be found between father's occupation and reading vocabulary, and between father's occupation and reading comprehension. As Table XIV indicates the correlations of .38 for vocabulary and .35 for

comprehension were statistically significant at the .001 level. Both hypotheses were, therefore, accepted.

With verbal intelligence partialled out, however, the statistical significance of the relationships between father's occupation and pupil's reading achievement is removed. This suggests that reading relevant differences in father's occupation are almost totally included in verbal intelligence of pupils.

It is noteworthy that if the nonverbal test is used as a measure of pupil's intelligence and nonverbal scores are partialled out the relationships between father's occupation and each measure of reading achievement remain statistically significant at the .01 level.

Mother's Education

Hypotheses five and six predicted that positive relationships would be found between mother's education and pupil's scores on reading vocabulary, and between mother's education and pupil's scores on reading comprehension. As Table XIV indicates the raw correlations were .34 for vocabulary and .36 for comprehension both being statistically significant at the .001 level. Both hypotheses were, therefore, accepted.

When verbal intelligence is partialled out the statistical significance of the relationships between

mother's education and pupil's reading achievement is removed. However, with non-verbal intelligence partialled out the relationships remain statistically significant.

When the influence of father's occupation is removed through partial correlation, the correlations between mother's education and reading achievement of pupils remains significant; .21 for reading vocabulary and .23 for reading comprehension. This would suggest that the education of the mother has an influence on pupil's reading achievement, independent of the father's education and income.

Reading Material at Home

Hypotheses seven and eight predicted that positive relationships would be found between reading material in the home and pupil's achievement in reading. The frequency of subscribing to a newspaper was used as an indicator of reading material available in the homes of pupils. Both hypotheses were accepted.

As indicated in Table XIV the raw correlation of reading material with vocabulary was .24 and for comprehension .20, both statistically significant. These correlations suggest that reading material at home relates more to achievement in reading vocabulary than to achievement in reading comprehension. With verbal

intelligence partialled out the statistical significance of the relationships is removed.

As reported in Chapter IV, the index used to obtain data on reading material in the home was of limited value. Higher relationships might have been found if other reading materials such as books, magazines and reference materials had been included in the definition of this variable. Crocker's study, cited in the literature, reported significant differences in the independent reading habits of pupils from homes where there was an abundance of reading material.²¹ It is noteworthy, however, that substantial correlations were found in the present study, .20 and .24, where the newspaper was the only indicator of reading material available in pupils' homes.

Size of Family

Hypotheses nine and ten predicted that negative relationships would be found between the number of children in the family and both measures of reading achievement. As Table XIV shows the correlations were -.14 and -.19 of children in the family with vocabulary and comprehension

²¹O.K. Crocker, "The Leisure Reading of High School Students in Newfoundland" (unpublished Doctoral dissertation, Indiana University, 1967), p. 214.

respectively were both in the hypothesized direction. The correlation between number of children in the family and reading comprehension was statistically significant. Thus hypothesis nine was rejected, hypothesis ten accepted.

With verbal intelligence partialled out, the correlations $-.02$ and $-.10$ indicate low negative relationships between the size of the family and pupil's reading achievement, neither being statistically significant. When scores on the nonverbal test were used as a measure of pupil's intelligence the size of the correlation changes very little with the effect of this variable removed.

Absenteeism

Hypotheses eleven and twelve predicted an inverse relationship between pupil's days absent and reading vocabulary, and between pupil's days absent and reading comprehension. As reported in Table XIV the raw correlation coefficients of $-.07$ for Hypothesis eleven and $-.02$ for Hypothesis twelve while they were in the hypothesized direction were not statistically significant. Both hypotheses were, therefore, rejected.

This suggests that in the present study pupil's days absent from school make very little contribution to

TABLE XIV

CORRELATION COEFFICIENTS BETWEEN FIVE SOCIO-ECONOMIC VARIABLES
AND READING ACHIEVEMENT
(N=305)

Reading Tests	Father's Occupation	Mother's Education	Reading Material	Size of Family	Days Absent
a)	<u>Raw Correlations</u>				
Vocabulary	.38 ³	.34 ³	.24 ²	-.14	-.07
Comprehension	.35 ³	.36 ³	.20 ¹	-.19 ¹	-.02
b)	<u>Correlations With Verbal Intelligence Partialled Out</u>				
Vocabulary	.13	.04	.05	-.02	.05
Comprehension	.11	.09	.01	-.10	.11
c)	<u>Correlations With Nonverbal Intelligence Partialled Out</u>				
Vocabulary	.31 ³	.23 ²	.17 ¹	-.12	-.06
Comprehension	.28 ²	.27 ²	.14	-.17 ¹	-.01

Note: Statistical significance at the .05 level is indicated by the superscript ¹, at the .01 level by ², and at the .001 level by ³.

the explanation of variation in reading achievement. It should be noted, however, that as indicated in Table VIII of Chapter IV the percentage attendance rates for pupils in the study were very high for the eight month period under consideration. A statistically significant relationship might have resulted if it had been possible to scrutinize and record pupils' attendance during the three year period spent in the primary grades when most of the basic reading skills are taught. The studies cited in Chapter II which reported a strong association between pupil absenteeism and achievement in school had included data on attendance over a period of several years. In the area under study, however, most schools did not record this information and data was obtained only from the class registers in use during the current year.

III. EDUCATIONAL VARIABLES

Hypotheses thirteen to sixteen dealt with the effects of two educational variables on each measure of reading achievement. The results of the correlation analysis are set forth in Table XV.

Teacher's Qualifications

Hypotheses thirteen and fourteen predicted that positive relationships would be found between teacher's qualifications and both measures of reading achievement. Table XV shows that the correlations are in the hypothesized direction for both reading vocabulary and reading comprehension but that only one, the correlation between teacher's qualifications and reading comprehension, is statistically significant. Hypothesis thirteen, therefore, was rejected, hypothesis fourteen, accepted.

When intelligence is partialled out the significance of the relationship is removed, except that with the effect of nonverbal intelligence removed the relationship between teacher's qualifications and paragraph comprehension remains significant. It appears that qualifications of the teachers may have a slightly greater effect on reading comprehension than on the reading vocabulary of fourth grade pupils.

It should be noted, however, that the teacher sample was small and that data on the qualifications of teachers ranged within only five points on the eleven point scale used in the study.

TABLE XV

CORRELATIONS BETWEEN TWO EDUCATIONAL VARIABLES AND READING ACHIEVEMENT
(N=305)

Variable	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
a) <u>Raw Correlations</u>				
Teacher's Qualifications	.12	NS	.17	.05
Size of School	-.04	NS	-.11	NS
b) <u>Correlations With Verbal Intelligence Partialled Out</u>				
Teacher's Qualifications	.07	NS	.14	NS
Size of School				
c) <u>Correlations With Nonverbal Intelligence Partialled Out</u>				
Teacher's Qualifications	.11	NS	.16	.05
Size of School				

Note: Where N exceeds 100, an r of .16 is required for significance at the .05 level, .23 at the .01 level and .32 at the .001 level.

Size of School

Hypotheses fifteen and sixteen predicted that there would be no relationship between the size of the school and pupil's reading achievement. As shown in Table XV the correlation coefficients of $-.04$ for reading vocabulary and $-.11$ for reading comprehension were not statistically significant. It is interesting to note that each of the raw correlations was negative. Thus, as hypothesized, the present study finds no relationship between the size of the city school and pupil's reading achievement.

IV. SOCIOECONOMIC VERSUS EDUCATIONAL VARIABLES

Hypotheses seventeen and eighteen dealt with the main question of the study, namely, whether socio-economic variables are more closely related to reading achievement than are school variables.

Three procedures will be used to test these hypotheses. First, there will be set forth a comparison of the size of the Pearson product-moment correlations between the socio-economic variables and both measures of reading achievement on the one hand, and between the educational variables and both measures of reading achievement on the other. Secondly, this comparison will be made with intelligence partialled out. Finally,

multiple correlation coefficients for each group of predictor variables will be set forth and comparisons will be made of the size of the multiple correlation between socio-economic variables and reading achievement, and that between the educational variables and reading achievement.

Correlation Coefficients

Considerable support for the main hypothesis comes from Table XVI where the correlations between socio-economic inputs and both measures of reading achievement were noticeable higher than the correlations between educational inputs and reading achievement. Three of the five correlation coefficients between the socio-economic variables and reading vocabulary were significant beyond the .05 level, whereas neither of the correlations between the educational input variables and reading vocabulary were statistically significant. Four of the five correlation coefficients between socio-economic variables and reading comprehension were statistically significant at or beyond the .05 level, whereas only one of the educational inputs, teacher's qualifications, reached the .05 level of significance.

It should be noted that intelligence correlated higher with each of the criterion variables than any of the other predictor variables used in the study. Of the

TABLE XVI

COEFFICIENTS INDICATING THE CORRELATIONS OF SOCIO ECONOMIC
AND EDUCATIONAL INPUT VARIABLES WITH READING ACHIEVEMENT

	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
<u>Socioeconomic Inputs</u>				
Father's Occupation	.38	.001	.35	.001
Mother's Education	.34	.001	.36	.001
Reading Material	.24	.01	.20	.05
Size of Family	-.14	NS	-.19	.05
Absenteeism	-.07	NS	-.02	NS
<u>Educational Inputs</u>				
Teacher's Qualifications	.12	NS	.17	.05
Size of School	-.04	NS	-.11	NS
<u>Intelligence</u>				
Verbal	.75	.001	.70	.001
Nonverbal	.51	.001	.42	.001

Note: Where N exceeds 100, an r of .16 is required for significance at the .05 level, .23 at the .01 level and .32 at the .001 level.

socio-economic variables father's occupation and mother's education appear to be the best predictors of pupil's achievement in reading.

Correlation Coefficients - Intelligence Partialled Out

With verbal intelligence partialled out, the statistical significance of the relationships between all of the input variables and reading achievement was removed and the resulting correlation coefficients as shown in Table XVII, are very low. Father's occupation remains the best predictor of reading achievement among the group of socio-economic and educational inputs considered in the study.

However, this should not be interpreted to mean that the correlations shown give the net relationships between factors when variability due to "intelligence" is held constant. One serious limitation of a partial correlation coefficient arises from the fact that when the influence of factors which themselves depend upon a number of "determiners" is partialled out there is an overlap; that is, too much is partialled out. For example, the abilities determining the scores in reading achievement overlap the intelligence test in other respects than in the "intelligence" involved because factors such as father's occupation and mother's education influence intelligence test

TABLE XVII

COEFFICIENTS INDICATING THE CORRELATIONS OF SOCIOECONOMIC AND
EDUCATIONAL INPUT VARIABLES WITH READING ACHIEVEMENT
AFTER INTELLIGENCE HAS BEEN PARTIALLED OUT

	Vocabulary	Level of Significance	Paragraph Comprehension	Level of Significance
<u>Socioeconomic Inputs</u>				
Father's Occupation	.13	NS	.11	NS
Mother's Education	.04	NS	.09	NS
Reading Material	.05	NS	.01	NS
Size of Family	-.02	NS	-.10	NS
Absenteeism	.05	NS	.11	NS
<u>Educational Inputs</u>				
Teacher's Qualifications	.07	NS	.14	NS
Size of School				

Note: Where N exceeds 100 an r of .16 is required for significance at the .05 level.

scores as well as reading scores. Thus, in partialling out intelligence some of the influence of many factors not strictly "intelligence" such as the socio-economic factors considered in this study are being held constant. Garrett illustrates this limitation of the partial correlation coefficients with an example:

" . . . it would be fallacious to interpret the partial correlation between reading comprehension and arithmetic, say, with the influence of "general intelligence" partialled out, as giving the net relationship between these two variables for a constant degree of intelligence. Both reading and arithmetic enter with heavy, but unknown, weight into most general intelligence tests; hence the partial correlation between these two, for general intelligence held constant, cannot be interpreted in a clear-cut and meaningful way. ²²

Multiple Correlation Analysis

The purpose of this analysis was to compare the importance of socio-economic inputs and the educational inputs in determining reading achievement. Multiple correlation coefficients were computed between reading vocabulary and a combination of the five socio-economic variables and, between reading comprehension and a combination of the same five variables. The 1620 Computer

²²Henry E. Garrett, Statistics in Psychology and Education (New York: David McKay Company, 1966), p. 422.

at Memorial University of Newfoundland calculated these correlations. Multiple correlation coefficients between each of the reading achievement variables and a combination of the two educational variables were calculated by hand. Table XVIII reports these coefficients.

The multiple correlation coefficient, usually designated by the letter R, indicates the strength of the relationship between one dependent variable and two or more independent variables. Each predictor makes a direct contribution to the criterion as well as an indirect contribution through its relationship with the other predictor. According to Guilford "the multiple R represents the maximum contribution between a dependent variable and a weighted combination of independent variables."²³ The relative contributions of each of the predictor variables is represented in the multiple regression equation by "beta coefficients" which are combined with the product-moment correlations to weigh the contributions of the various predictor variables. This

²³J.P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw Hill, 1950) pp. 403-404.

TABLE XVIII

COEFFICIENTS INDICATING THE MULTIPLE CORRELATION
OF SOCIOECONOMIC AND EDUCATIONAL INPUTS AND
INTELLIGENCE WITH READING ACHIEVEMENT

Input Variables	Vocabulary	Paragraph Comprehension
Socioeconomic	.43*	.44*
Educational	.11	.11
Intelligence	.75*	.70*
Socioeconomic, Educational and Intelligence	.87*	.83*

* Significant at the .01 level

weighted contribution of the predictor variables is combined in multiple regression to give R , the coefficient of multiple correlation.

Ferguson explains it this way:

It is the correlation between a criterion variable and the weighted sum of the predictors, the predictors being weighted in order to maximize that correlation. ²⁴

In the present study when the socio-economic variables were combined in multiple regression the coefficient between the socio-economic variables and reading vocabulary .43, and between the socio-economic variables and reading comprehension .44, are statistically significant at the .01 level. The multiple R 's between the educational variables and reading achievement, however, are much lower and are not statistically significant, .11 for each of the criterion measures. Table XVIII reports these multiple correlation coefficients.

In terms of R^2 , the coefficient of multiple determination, the joint action of the five socio-economic variables accounts for nineteen per cent of the variance in each of reading vocabulary and reading comprehension. On the other hand, the educational variables account for

²⁴George A. Ferguson, Statistical Analysis in Psychology and Education (New York: McGraw Hill Company, 1966) p. 400.

only one per cent of the variance in each measure of reading achievement. Thus, the major hypotheses of the study were supported. It should be noted, however, that the multiple R of .43 for vocabulary is only slightly higher than the product-moment correlation of .39 between vocabulary and father's occupation. If only father's occupation and mother's education are combined in multiple regression the resultant R of .42 accounts for eighteen per cent or almost all of the variance in vocabulary. This means that the addition of the third, fourth and fifth variables increased prediction only very slightly. In a similar manner the multiple correlation coefficient of .41 between reading comprehension and the combination of father's occupation and mother's education is almost as high as the R between the whole group of variables combined. These two variables alone account for sixteen per cent of the variance in pupils reading comprehension. The size of the family accounts for most of the remaining two per cent of the variance.

It should also be noted that verbal intelligence accounts for fifty-six per cent of the variance in reading vocabulary and forty-nine per cent of the variance in reading comprehension. This is not surprising since as indicated in the literature there is an overlap between

the factors determining the scores in reading achievement and those determining intelligence test scores.

It should be noted that twenty-four per cent of the variance in reading vocabulary and thirty-one per cent of the variance in reading comprehension is still to be accounted for after the factors in the present study have been considered.

V. SUMMARY

The first three sections of the chapter dealt with the sixteen minor hypotheses set forth in Chapter II. Statistically significant relationships were found between intelligence and both measures of reading achievement. Correlations between each of the independent variables and reading achievement were compared, both with and without intelligence partialled out. Three of the five socio-economic variables namely mother's education, father's occupation and reading material in the home showed a statistically significant relationship with both reading vocabulary and reading comprehension. A fourth variable, size of family, was statistically significant in relation to reading comprehension. However, with verbal intelligence partialled out none of the relationships were significant.

No statistically significant relationships were found between teacher's qualifications and reading vocabulary, between size of school and reading vocabulary, or between size of school and reading comprehension. The relationship between teacher's qualifications and reading comprehension was significant at the .05 level before intelligence was partialled out.

Product-moment correlations, partial correlations, and multiple correlations were used to test the major hypotheses of the study. The multiple correlations between the group of socio-economic variables and reading vocabulary and between these variables and reading comprehension were significant at the .01 level and accounted for nineteen per cent of the variance in each measure of reading achievement. On the other hand, the multiple R's for the group of educational variables were not significant for either measure of reading achievement.

Intelligence, as defined in this study, accounted for fifty-six per cent of the variance in reading vocabulary and forty-nine per cent of the variance in reading comprehension. Of the five socio-economic variables investigated, two--father's occupation and mother's education--predicted reading achievement almost as well as the whole group combined in multiple regression.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

This study was undertaken to examine the relationship between certain socio-economic and educational variables and reading achievement. The major purpose of the study was to determine whether, among grade four boys in St. John's, Newfoundland, socio-economic factors were more related to reading achievement, as measured by tests in vocabulary and paragraph comprehension, than were educational input factors.

To elucidate the relationships, sixteen minor hypotheses and two major hypotheses were formulated. The minor hypotheses dealt with the relationships between intelligence and reading achievement; between the socio-economic variables father's occupation, mother's education, reading material at home, size of family and absenteeism, and reading achievement of pupils; and, between the educational variables teacher's qualifications and size of school, and pupil's reading achievement. The two major hypotheses predicted that the combined effect of the socio-economic variables would explain more of the variance in reading vocabulary and reading comprehension than would

the combined effect of the educational variables.

The Research Design

Three hundred and five fourth grade boys selected randomly from the 726 boys in schools within the city limits and under the jurisdiction of the Roman Catholic School Board for St. John's were the pupil sample. The parents or guardians of these pupils constituted the parent sample. The teacher sample consisted of twenty-five regular classroom teachers in thirteen schools.

Two measures of reading achievement, vocabulary and paragraph comprehension, were obtained from subtests of The Nelson Reading Test 1962 Revised Edition and the raw scores from each subtest were used as the dependent or criterion variables in the analysis. A measure of intelligence was obtained from The Lorge Thorndike Intelligence Tests, Form 3AV and Form 3ANV, and the "deviation I.Q.'s" supplied by the authors of the test were used as predictor or independent variables in the study.

Information regarding mother's education, father's occupation, reading material in the home and size of the family was obtained using a questionnaire sent to the parent or guardian of each pupil in the sample. The number of days each pupil was absent from school during

the current year was taken from the classroom registers. Data relating to teacher's qualifications and size of the school was obtained by the writer from records at the school board office and verified by consultations with principals and teachers.

The testing program and the completion of questionnaires was carried out in May and June, 1968. All data was coded, and punched on I.B.M. cards. The 1620 computer at Memorial University of Newfoundland carried out the computations. Means, standard deviations, Pearson product-moment correlation coefficients, partial and multiple correlation coefficients were used in the descriptive and statistical analysis reported in chapters IV and V of this study.

The Findings

The descriptive analysis of Chapter IV revealed that boys in St. John's were three months ahead of their American counterparts on reading vocabulary but more than nine months behind them on reading comprehension. The median I.Q. of pupils in the sample compared favorably with the American test norms. Seventy per cent of fathers in the sample were in the lowest three categories on the Blishen scale. The median education of mothers was 9.3

years of formal schooling and only seven per cent were classed as illiterate or functionally illiterate. Families were large, 5.2 children on the average, and there was a tendency for fathers in the lower occupational categories to have more children. The attendance record of pupils in the sample was good. Although the qualifications of teachers in the sample were superior to those on a provincial basis the number of teachers with only one year of professional training, sixty per cent in the sample, was higher than would be expected for St. John's, the largest urban area in the province. The majority of schools in the sample were large and had one or more streams of pupils at each grade level.

The testing of the hypotheses was reported in Chapter V. All of the predicted relationships were in the hypothesized direction. Three of the socio-economic variables, namely father's occupation, mother's education, and reading material at home, showed a statistically significant relationship with reading vocabulary; and, in addition to those three another, size of family, reached the level of significance required for reading comprehension. On the other hand, only one statistically significant relationship was found between the educational variables and reading achievement, this being between teacher's

qualifications and reading comprehension.

The major hypotheses of the study were supported. The correlation analysis revealed that the socio-economic variables were of greater importance in explaining variation in grade four reading achievement than were the educational input variables. When combined in multiple correlation the socio-economic inputs accounted for nineteen per cent of the variance in reading achievement, whereas the educational inputs accounted for only one per cent of the variance in each of reading vocabulary and reading comprehension. Furthermore, the greater part of the prediction can be attributed to two variables, father's occupation and mother's education. The addition of size of family increases prediction slightly when reading comprehension is the independent variable.

II. CONCLUSIONS AND IMPLICATIONS

Although the results of this study appear clear-cut, some care is required in drawing conclusions. Certain trends are apparent from the analysis, even though several of the relationships failed to reach the level required for statistical significance.

Conclusion I

The high correlation between intelligence and reading achievement has been further confirmed. In this study intelligence accounted for fifty-six per cent of the variance in reading vocabulary and forty-nine per cent of the variance in reading comprehension. Although the correlations are high the relationships between intelligence and the criterion variables are not sufficient to account for the wide variability in reading achievement found among fourth grade pupils.

Implication

The variance in reading achievement accounted for by intelligence in the present study should be interpreted with some caution. Correlations of .75 for vocabulary and .70 for paragraph comprehension indicate there is no close parallel between reading scores and intelligence.

Thus extreme caution should be exercised when measures of intelligence are being used to make decisions on such crucial matters as reading readiness, grouping for instruction and prediction of success in reading. If intelligence tests are used it should be recognized that many group tests tend to penalize poor readers and to significantly underestimate their probable mental ability.

Individual intelligence tests such as the Wechsler Intelligence Scale for Children and group tests such as the S.R.A. Primary Mental Abilities that lend themselves to a pattern analysis of the relative strengths and weaknesses of the individual provide a better diagnosis of the needs and abilities of pupils.

The findings of the present study suggest that over-reliance on intelligence tests could result in neglect of several other important factors that account for variability in pupil's reading achievement.

Conclusion 2

Of the socio-economic inputs two, father's occupation and mother's education, contributed significantly to the prediction of reading achievement. When combined in multiple regression those two variables accounted for almost all of the variance attributed to the entire group of socio-economic inputs. Size of family was the only other variable of importance and contributed slightly to the prediction of pupil's reading comprehension. This would suggest that the education of the mother and the father's occupational status are the two most important socio-economic determinants of reading achievement.

Implication

Principals and teachers must recognize the fact that certain socio-economic factors, especially the occupation of the father, the level of the mother's education and the size of the family, account for a significant proportion of the variance in pupil's reading achievement. Information on these factors could be obtained at the time that children enter school and be available to the classroom teacher so that more account of the child's total environment can be taken in the planning and evaluation of reading instruction. The findings here also suggest the importance of continuous communication between the home and the school if there is to be a conscientious effort towards the improvement of reading.

School personnel and the general public alike must be aware of the influence of the various social factors on achievement in schools and endeavor to plan and finance compensatory programs such as pre-school centres, diversified programs in reading readiness for beginners, diagnostic and remedial procedures and free summer schools. A reading clinic could be set up at Memorial University to provide aid in the diagnosis of reading problems and to experiment with different approaches. In addition, there

should be provision by the government for the allocation of salaries to reading specialists and other trained teachers in order to set up remedial reading programs in schools where there is such a need.

Concomitantly, an attempt could be made to raise the economic, cultural and intellectual level of the home through a long-range program of adult education. In a recent article Kitchen considers this factor and outlines a number of steps that can be taken to counteract the negative influences of low income and illiteracy in the homes of Newfoundland pupils.¹

Conclusion 3

The two educational inputs considered in the study, namely, teacher's qualifications and size of the school, were not found to relate significantly to pupil's achievement in reading. The only exception was the relationship between teacher's qualifications and reading comprehension which was statistically significant when considered in the product-moment correlation analysis. The multiple correlation analysis, however, revealed that

¹H.W. Kitchen, "Educational Policies for the Seventies" (Mimeographed: November, 1969).

the combined effect of the educational variables accounted for only 1 per cent of the variance in reading achievement.

Implication

This finding should not be interpreted to mean that educational inputs can be regarded as insignificant factors relating to pupil's achievement in reading. Rather, it would suggest that after a certain level has been reached additional years of training for teachers and larger school buildings do not contribute much to an increase in educational productivity. It should be noted that in the present study the majority of teachers had at least one year of training and most schools were large. Thus, the lack of variation among school operating characteristics, especially where all schools were under the jurisdiction of one school authority, may have made it more difficult to identify the relative impact of the educational inputs on pupil's reading achievement. Perhaps in large urban areas such as St. John's where certain minimal educational standards have been met the length of the training may not be as important in the consideration of the qualifications of elementary teachers as certain other factors such as the kind and the recency of training, particularly their training in reading. Also

the division of school along more functional lines, for example, primary and elementary units, may be a more important educational variable than the size of the school as measured by the total number of classrooms.

Conclusion 4

The multiple correlation analysis revealed that the socio-economic factors have a greater influence on pupils' reading achievement than do the educational inputs considered in the study.

Implication

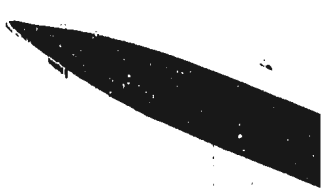
The evidence in this study indicates that much of the problem with the low level of reading in St. John's is sociological, as well as pedagogical, and that school personnel and others need to recognize and to take account of the various influences in the child's total environment if efforts to raise the level of education are to be successful. This implies that teachers must be more sensitive to social class differences and learn how to minimize their own biases in this respect. Preservice and inservice teacher training programs should place more emphasis on courses dealing with education as it relates to the social context in this province. As mentioned earlier in this chapter teachers need to be more familiar with the

home environments of the pupils whom they teach.

It seems credible that much of the reading retardation and its grim consequences for school learning could be prevented by an enriched program of preschool education that would emphasize perceptual discrimination and language acquisition. In addition to this, changes could be made in the beginning reading program so that more emphasis would be placed on oral language growth for children from deprived home environments. Intensive diagnostic and remedial treatment should be provided for children at all age levels.

The most effective use of all the media, print and non-print, must be found in order that the school might help pupils overcome the effects of a deprived home environment. Auditory and visual aids, can, if properly used, make a positive contribution to the improvement of reading in the classroom. Of more significance, perhaps, is the tremendous impact of television upon the lives of children and adults. The serious educational role of this medium illustrates the need for sound educational planning in implementing educational television.

In order to counteract the negative influences of these factors remote from the school which affect achievement, however, compensatory educational arrangements



such as those suggested above will not be sufficient. Vigorous and long range programs of adult education and family planning and efforts to revitalize the economy of the province must be instituted if Newfoundland's educational problems in general, and reading problems in particular, are to be solved.

III. RECOMMENDATIONS FOR FURTHER RESEARCH

A number of ideas for further research arise from the results and the limitations of this study.

- 1) There is need for a similar study to be carried out in other urban areas of the province. Such a study should involve boys and girls and include pupils of all religious denominations.
- 2) A more in-depth study involving a small number of pupils and using a clinical approach to the diagnosis of reading difficulties would be appropriate at this time.
- 3) Research aimed at explaining the wide differences found between reading vocabulary and reading comprehension in this and other studies should be carried out.

4) Certain psychological factors still remain to be investigated. This research would consider such variables as the attitudes, motivations and values of parents from different social classes and their relationships to pupils' achievement in school.

5) The relationship between the educational inputs and achievement need to be researched in greater depth. In the case of teacher's qualifications specialized training in reading as well as the recency of training should be considered as independent variables.

6) A thorough study should be made of the reading readiness programs and reading programs for beginners presently used in Newfoundland schools. This research should attempt to assess the worth of this material for children from culturally deprived home environments.

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APPENDICES

APPENDIX A

COPY OF A LETTER SENT TO THE ROMAN CATHOLIC
SCHOOL BOARD FOR ST. JOHN'S

Memorial University of Newfoundland,
St. John's,
February 27, 1968.

Dear Sir,

The undersigned graduate student in Educational Administration at Memorial University is contemplating under the auspices of the Faculty of Education at the University, a study involving a randomly selected sample of approximately three hundred Grade Four boys enrolled in Roman Catholic schools in St. John's in the province of Newfoundland.

I am, therefore, asking your permission to allow me to conduct this study in schools under the jurisdiction of your Board. If the necessary permission is granted I would contact the principals and teachers concerned in order to arrange for a suitable date to administer reading and intelligence tests. In addition I shall want to collect data on teachers' qualifications, size of schools and pupil absenteeism. A questionnaire requesting certain information about the child's home environment will be sent to the parent or guardian of each child in the sample.

I thank you in advance in anticipation of your co-operation in this study.

Yours truly,

Geraldine M. Roe

APPENDIX B

P.O. Box 81
Arts and Education Building
Memorial University of Nfld.
St. John's Newfoundland

Dear Parent or Guardian:

As part of the requirements for the M.Ed. program in Educational Administration I am conducting a study in the field of reading among Grade four pupils in St. John's.

Your cooperation in completing this parent questionnaire and returning it to your child's teacher will be greatly appreciated.

Yours truly,

.....

G. Roe

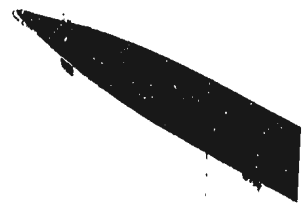
PARENT QUESTIONNAIRE

1. TO THE MOTHER (OR GUARDIAN): How many years of schooling do you have? Circle the number showing the highest grade you have completed.
1 2 3 4 5 6 7 8 9 10 11 12
University or Trade School, and other training beyond high school
1 2 3 4 5 6 7 8 years.
2. TO THE FATHER (OR GUARDIAN): What do you usually do for a living? For example: a brakeman with the C.N.R., a fisherman, a captain, drives a taxi, teaches school, salesman for a life insurance company, etc. Give as many details as you can. _____
3. How many children do you now have who are 18 years of age or under and living at home? _____
4. Do you buy the newspaper? Yes ____ No ____ . If you answered yes to the question please indicate below if this is usually; Daily ____ or Weekly ____ .

Pupil's Name _____

SCHOOL QUESTIONNAIRE

- [illegible]



APPENDIX D
TEACHER'S QUALIFICATION SCALE

Department of Education grade or licence	Training	Point Value
D Licence	High School with no professional training	1
P and C Licences	One six-week summer school of Professional Training	2
B Licence	Two six-week summer schools of Professional Training (No longer granted)	3
A Licence	A University year of professional training minus one course	4
First Grade	A University Year of professional training	5
Second Grade	Two complete years of professional training or the equivalent	6
Third Grade	Three complete years of professional training or the equivalent	7
Fourth Grade	Four complete years of professional training or the equivalent	8
Fifth Grade	Five complete years of professional training or the equivalent, including an education Degree or Diploma	9
Sixth Grade	Six complete years of professional training or equivalent, in an Education Degree and one other Degree	10
Seventh Grade	Seven complete years of professional training or equivalent, including two Bachelor's Degrees or a Bachelor's Degree and an Education Diploma, and a Master's Degree.	11

APPENDIX E
MOTHER'S EDUCATION SCALE

FORMAL EDUCATION	POINTS
No formal education	0
Grade I	1
Grade II	2
Grade III	3
Grade IV	4
Grade V	5
Grade VI	6
Grade VII	7
Grade VIII	8
Grade IX	9
Grade X, or Grade IX and one year vocational school	10
Grade XI, or Grade IX and two years vocational or technical school; or Grade X and one year vocational or technical school	11
Grade XI and one year University, two summer schools at University, one year vocational school, or one year technical school, or Grade 12	12
Grade XI and two years of University, vocational, or technical school, or equivalent	13
Grade XI and three years University, vocational, or technical school, or equivalent	14
Grade XI and four years University, vocational, or technical school, or equivalent	15
Grade XI and five years of higher education	16
Grade XI and six years of higher education	17
Grade XI and seven years of higher education	18
Grade XI and eight years of higher education	19
Grade XI and nine years of higher education	20

APPENDIX F
CORRELATION MATRIX (N=305)

RV = Reading Vocabulary
RC = Reading Comprehension
IQ(V) = Verbal Intelligence
IQ(NV) = Nonverbal Intelligence
FO = Father's Occupation
ME = Mother's Education
RM = Reading Material at Home
DA = Days Absent
NC = Number of Children in Family
TQ = Teacher's Qualifications
SS = Size of School

RV	RC	IQ(V)	IQ(NV)	FO	ME	RM	DA	NC	TQ	SS	
100	71	75	51	38	34	24	-07	-14	12	-04	RV
	100	70	42	35	36	20	-02	-19	17	-11	RC
		100	65	40	42	27	-14	-17	10	-12	IQ(V)
			100	23	30	18	-03	-08	01	03	IQ(NV)
				100	48	38	-03	-08	24	-20	FO
					100	48	-03	-13	13	-06	ME
						100	-02	-19	16	-08	RM
							100	-05	10	-01	DA
								100	-09	02	NC
									100	-13	TQ
										100	SS

Decimal points are omitted

When N exceeds 100, an r of .16 is required for significance at the .05 level; .23 at the .01 level; and, .32 at the .001 level.

APPENDIX G

SCHOOLS AND PUPILS IN THE SAMPLE

Name of School	Number of Classes	Number of Pupils Tested (May, 1968)	Number of Pupils in Final Sample*
1. Mary Queen of the World	2	15	14
2. St. Bonaventure's	2	37	34
3. St. Joseph's, Hoylestown	1	16	15
4. Holy Cross Elementary	3	37	33
5. St. Joseph's, Kilbride	2	15	13
6. Our Lady of Lourdes	1	6	5
7. St. Teresa's, Mundy Pond	1	27	26
8. St. Teresa's, Thorburn Rd.	1	3	3
9. St. Teresa's, Kenmount Rd.	1	2	2
10. St. John Bosco	2	20	17
11. Mary Queen of Peace	1	22	22
12. St. Pius X	2	34	31
13. St. Patrick's Hall	6	96	90
	—	—	—
Total	25	330	305
	—	—	—

* Because of incomplete data, twenty-five pupils were excluded from the final sample.

