A STUDY IN THE RELATIONSHIP BETWEEN AGE AT ENTRANCE TO GRADE I AND LATER READING ACHIEVEMENT

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A STUDY OF THE RELATIONSHIP BETWEEN AGE AT ENTRANCE TO GRADE I AND LATER READING ACHIEVEMENT

by

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The undersigned certify that they have read, and recommend for acceptance, a thesis entitled A STUDY OF THE RELATIONSHIP BETWEEN AGE AT ENTRANCE TO GRADE I AND LATER READING ACHIEVEMENT submitted by Sister Margaret Pittman in partial fulfillment of the requirements for the Degree of Master of Education.

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ABSTRACT

This study was designed to investigate the relationship between age at time of entrance to Grade I and later reading achievement. In most schools of the Province of Newfoundland, children who are six years old by December 31 of the school year are eligible for admission to Grade I. The early entrants, ranging in age from five years eight months to five years eleven months, are expected to participate with the late entrants, ranging in age from six years to six years eight months. Some educators are of the opinion that the lack of maturity of many early entrants is a major cause of the failure of many of these children to make satisfactory progress during the elementary school period.

Since other variables, if not controlled, might influence the findings, the extent to which such factors as kindergarten experience, sex, and the socio-economic status of the family influence reading achievement was also investigated.

Data for the study were gathered from selected elementary schools in the city of St. John's. The subjects were 320 eight-year-olds who had entered school in 1965, and who were at time of testing in Grade III, and 273 eleven-year-olds who had entered school in 1962, and who were at time of testing in Grade VI. Both age groups included a

number of children who had begun school at the same time as their respective groups, but who had repeated a grade.

Children who were six years old during the period September to December following entrance to Grade I were classified as early entrants. Children who were six years old during the period January to April preceding entrance to Grade I were classified as late entrants. Each group was further divided according to sex, kindergarten experience, and socio-economic status. The Lorge-Thorndike Intelligence Test and the Revised Nelson Reading Test were administered to all the children in the sample.

Although data are given for the sample as a whole, statistical analysis was performed on a random sample of 160.

The research hypotheses were tested by analysis of covariance. None of the interactions between the various factors--age, sex, kindergarten experience, and socio-economic status--were found to be significant. Significant differences were found between the reading achievement of early and late entrants, favouring the late entrants. Significant differences were also found between the reading achievement of children in the high and low socio-economic brackets, favouring those from high socio-economic backgrounds. Differences in reading achievement due to kindergarten experience and to sex were not significant.

ACKNOWLEDGEMENTS

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THE PROBLEM

I. INTRODUCTION

Educators are becoming increasingly aware of the importance of the early years in the educational process. They stress the importance of giving children a good start so that each child may be prepared to make the best possible use of his educational opportunities.[1] They state that the early years are the foundation years and the progress of the child in these years is a major determinant of his later success.

There are many who claim that children should begin their formal education at an earlier age. They claim that children today are more 'ready' to profit from early school experience than children of a generation ago. On the other hand, others state that a sufficient stage of physical maturity is necessary before effective learning is possible. They stress that although learning can be accelerated by people and things in the child's environment, the steps in maturation can be neither telescoped nor skipped.

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[1] C.A. Chandler, "The Importance of the Early Years," Childhood Education, XXXIX (September, 1962), pp. 3-5; also H.W. Worth, W.T. Fagan, and E.M. King, Before 6: A Report on the Alberta Early Childhood Education Study (Alberta: The Alberta School Trustees' Association, 1966).

While this study will not attempt to examine the controversial issue of readiness, it may be contended that a fair percentage of children entering school each year lack the maturity and the background necessary to cope with the demands made on them during the first years of formal instruction. Research by the Gesell Institute of Child Development revealed that "from 9 per cent to 31 per cent of the children in Kindergarten, first and second grades were completely unready for their grades, and from 32 per cent to 40 per cent more were questionably ready".[2] In discussing the problem of 'overplacement' as postulated by Ilg and Ames of the Institute, Gerras[3] states that although some children may be secure, mature, and intelligent enough, even at five, to take on the formal instruction of first grade, such children are rare. He estimates that not one boy in a hundred is ready for first grade before the age of six and a half. Girls, who are consistently about six months ahead of boys in their development at this stage, do a little better.

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[2] J.W. Baldwin, "A Good Start in School--A Child's Right," The Elementary School Journal, LXVIII (May, 1968), p. 388.

[3] C. Gerras, "School Too Soon Means Trouble," The Sign, May, 1967, pp. 11-13.

In view of the fact that a primary child's academic progress is usually measured mainly in terms of reading achievement, and that failure to master reading at this level can have far-reaching effects, it is important that factors which may bear some relationship to school readiness, and hence to achievement in reading, be given careful consideration.

II. THE PURPOSE OF THE STUDY

The major purpose of the study is to investigate the relationship between age at entrance to school and later school achievement in reading. More specifically, the present study investigates the differences in reading achievement between younger and older school entrants at the end of Grades III and VI.

Since other variables, if not controlled, might influence the findings, the study seeks to determine the extent to which such factors as kindergarten experience, sex, and the socio-economic background of the pupil are related to reading achievement.

III. IMPORTANCE OF THE STUDY

The relatively low level of reading achievement in many Newfoundland schools, especially in the area of reading,

the high dropout rates, and the large number of pupils retained in the grades are matters of much concern to all those engaged in the field of education in this Province. A study[4] carried out by the Department of Education, and reported by the Royal Commission on Education and Youth, revealed that in 1964, 56 percent of the Grade IX students tested were reading below grade level; 27 percent had a reading level below Grade VII. Analysis showed that a positive relationship existed between the size and type of school and the level of achievement.

A similar survey[5] carried out by the Department during the school year 1964-65 involved ten percent samples of all students in the Province in Grades IV and VI. Of the Grade IV students tested, 22 percent failed to reach the norm (4.1) in vocabulary; 21 percent were below the norm in comprehension. The median in the Vocabulary test was 3.25. In the Comprehension test it was 3.3. In Grade VI the results were similar, more than half the students being eight to nine months below the expected norm. As in the previous study, there was a positive relationship between size of school and level of achievement.

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[4] Report of the Royal Commission on Education and Youth, Volume I, Province of Newfoundland and Labrador, 1967, p. 43.

[5] Ibid.

The Royal Commission on Education and Youth conducted a study[6] of achievement in the schools of the Province of Newfoundland in relation to size and type of school, and teacher qualifications. Grades VIII and XI were selected for the study. Although at the Grade VIII level the sample as a whole yielded test results only slightly below the norms, the achievement level in the smaller schools in remote areas fell far below. The larger elementary schools, on the other hand, were slightly above the test norms in level of achievement. In all instances, the biggest weaknesses were in the area of reading comprehension and arithmetic problem-solving. The level of achievement in large elementary schools outside St. John's was found to be higher than that for central high schools of comparable size. This may be explained by the fact that the large elementary schools are found in less isolated areas. The Report also notes that the qualifications of teachers of Grades VIII in the large elementary schools were higher than those of teachers of Grade VIII in central high schools. At the Grade XI level, test scores compared favourably with the norms. This should not be surprising in view of the fact that only the fittest (approximately 40 percent) of our students reach Grade XI.

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[6] Ibid., p. 38.

The relationship between age and grade, as reflected in the large number of students overage for their grade, has also been noted. The age-grade table for the year ending June, 1965, shows that while 72 percent of the Grade I girls were of the normal age--six years--percentages decreased from grade to grade until by Grade IX only 40 percent were of normal age--fourteen years. The boys fared even worse, with only 34 percent of the Grade IX's being of normal age.[7]

A report[8] issued by the Dominion Bureau of Statistics (1966), and reported by the Royal Commission on Education and Youth, concerning repeaters for all the provinces shows that for the year 1963-64, Newfoundland had the highest percentage of repeaters in Grades II, IX, and X; the second highest percentage in Grades III, IV, and V; the third highest in Grades VI, VII, and VIII; and the fourth highest in Grade XI.

The relationship between educational achievement and the socio-economic status of the family and community as measured by the level of literacy, per capita income, size of community and size of family, has also been noted. In a

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[7] H.W. Kitchen, "Increasing the Supply of Qualified Teachers," NTA Journal, LVIII (December, 1966), p. 21.

[8] Report of the Royal Commission on Education and Youth, op. cit., p. 37.

recent research paper, Kitchen[9] stated that the educational patterns of retention, completion, and retardation in the grades are linked with the social and economic patterns. He stressed the importance of counteracting the influences on school children and pre-school children of adult illiteracy in the home and community.

Previous studies have, then, analysed various aspects of the problem of low achievement in the Province in relation to size and type of school, teacher qualifications, and the socio-economic status of the family and community. The age-grade relationship and the sex factor have also been noted. There is, however, a complete absence of research into the relationship between age at entrance and later school achievement.

The writer belives it is important to investigate the relationship between reading achievement and chronological age at the time of entrance. It is the writer's contention that a significant number of children are overplaced right from the time of their entrance into Grade I, that they progress haltingly through the grades, underachieving in many cases, repeating grades in others, and in still others, joining the long list of school dropouts.

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[9]H.W. Kitchen, "A preliminary Study of Demographic and Socio-Economic Factors in the Atlantic Provinces and their Relationships to Measures of Educational Output," (unpublished Report, October, 1967).

There is also an absence of research into the relationship between kindergarten experience and school achievement. A planned kindergarten year might pave the way for later school success. It might make possible the identification of potential failures, and early identification could go a long way towards preventing failure and reducing the need for later remedial measures.

These are some of the questions that demand continuous research and deliberation. This study attempts to provide data which will help to provide answers to some of them.

IV. HYPOTHESES

Consideration of the relationship between the factors involved in the study--age at time of entrance, sex, kindergarten experience, and the socio-economic status of the family--and later reading achievement has led to the formulation of a number of hypotheses. These hypotheses may be stated as follows:

Hypothesis 1. Late entrants are superior to early entrants in reading achievement at the end of Grade III and Grade VI.

Hypothesis 2. Girls surpass boys in reading achievement at the end of Grade III and Grade VI.

Hypothesis 3. Children with kindergarten experience are superior in reading achievement to children who have not had such experience at the end of Grade III and Grade VI.

Hypothesis 4. The reading achievement of early entrants with kindergarten experience surpasses the reading achievement of early entrants who have not had such experience.

Hypothesis 5. The reading achievement of children from high socio-economic backgrounds is superior to the reading achievement of children from low socio-economic backgrounds.

Hypothesis 6. There is a greater difference in reading achievement between the kindergarten pupil and the non-kindergarten pupil in the low socio-economic bracket than between the kindergarten pupil and the non-kindergarten pupil in the high socio-economic bracket.

V. PROCEDURE[10]

The subjects of the study were drawn from fourteen elementary schools in the city of St. John's. Eight of these schools had provision for kindergarten; six did not. The students were from every socio-economic level, ranging from Class 1 to Class 7 on the Blishen Scale.

There were 287 children in the Grade III sample and 216 in the Grade VI sample. Also included in the testing

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[10] Chapter III, entitled "Collection and Treatment of the Data," contains a detailed description of the procedures used in selecting schools, students, tests, as well as a description of the statistical design.

were 33 eight-year-olds and 57 eleven-year-olds who had entered Grade I at the same time as the children in the sample but who repeated a grade. This was done in order to ascertain which age group is more likely to be retained in the grades. These children were not included in the statistical analysis.

VI. LIMITATIONS OF THE STUDY

The study focused on the relationship between age at entrance to Grade I and reading achievement in Grades III and VI. The relationship between reading achievement and the factors of sex, kindergarten experience, and socio-economic status was also investigated. Although the effect of intelligence on reading achievement is recognized, no attempt was made to analyse the results for the various intelligence levels. Intelligence was controlled through the analysis of covariance.

The study did not include the investigation of such factors as type of kindergarten program, size of school, teacher qualifications, and the like. Undoubtedly these are major factors in reading achievement. Neither was there any attempt to investigate pupil achievement in areas other than reading.

Since, in this Province, chronological age is used as the sole criterion for admission to school, the relationship between mental age at time of entrance and later reading achievement was not investigated.

VII. EXPLANATION OF TERMS

Age at entrance. This term refers to the chronological age of the child on September 1 of the year of admission to Grade I.

Late entrants. Children whose sixth birthday falls within the period January to April preceding entrance to Grade I are referred to as late entrants. The age range for this group is 6 years 5 months to 6 years 8 months.

Early entrants. Children whose sixth birthday falls within the period September to December following entrance to Grade I are referred to as early entrants. The age range for this group is 5 years 8 months to 5 years 11 months.

Socio-economic status. For purposes of this study, the socio-economic status of the family is based on the occupational level of the father. The Blishen Scale is used to determine the occupational level.

High socio-economic background. Children whose fathers fall in classes one, two, three, and four on the Blishen Scale are classified as coming from high socio-economic background. (High SES).

Low socio-economic background. Children whose fathers fall in classes five and six of the Blishen Scale are classified as coming from low socio-economic background. (Low SES).

Repeaters. Children who are one year overage for their grade, who began school the same year as the non-repeaters being tested, and who have repeated or are repeating a grade are referred to as repeaters.

Eight-year-olds, Eleven-year-olds. Whenever repeaters are included, as in the descriptive analysis in Chapter IV, the children are categorized according to age--eight-year-olds and eleven-year-olds.

Grade III, Grade VI. Whenever repeaters are excluded from the study, as in the statistical analysis of the data in Chapter V, the children are categorized according to grade--Grade III, Grade VI.

VIII. ORGANIZATION OF THE THESIS

A review of the literature and related studies follows in Chapter II. Chapter III gives the design of the study. This is followed by a descriptive analysis of the data in Chapter IV. Chapter V gives a report of the statistical treatment of the data together with a discussion of the findings. Chapter VI contains a summary and conclusions.

CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this chapter is to summarize some of the research findings which relate school achievement to age at time of entrance, kindergarten experience, and the socio-economic status of the family. Research related to the sex factor is also included.

I. ENTRANCE AGE AND ACHIEVEMENT

A survey of the literature and related studies reveals seemingly conflicting findings on the value of early admission to school.

In an article entitled "At What Age is a Child Ready for School?", Gelles and Coulson[1] state that children of average intelligence younger than six years of age have small chance of success in first grade. They suggest that premature experience in learning to read may tinge the child's whole outlook with defeatism. They contend that, although many younger children may be able to keep up with the older children, they often do so at the cost of social, physical, or academic malajustment, which appears years later.

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[1] H.M. Gelles and M.C. Coulson, "At What Age Is a Child Ready for School?" School Executive, LXXVIII (August, 1959), pp. 29-31, cited by R.V. Hall, "Does Entrance Age Affect Achievement?" Elementary School Journal, LXIII (April, 1963), p. 392.

To ascertain the effect of age at time of entrance on achievement in elementary school, King[2] compared a group of younger entrants (average age five years, ten months) with older entrants (average age six years and seven months). The groups were compared on achievement, progress through the grades, attendance, and personal and social adjustment to the end of Grade VI. The average IQ of the younger group was significantly higher than that of the older group. It was found that the majority of children who entered Grade I before the chronological age of six years did not achieve grade level while the majority of older students achieved beyond grade level standards. The scores of children in the younger group ranged from Grade 3.8 to Grade 9.6 with approximately 61 percent falling below grade level. The corresponding range for the older children was from Grade 5.4 to Grade 11.3 with only 24 percent falling below the norm. The mean score of the younger group was 6.2; that of the older group was 7.68. There were more repeaters among the younger group. Of the eleven repeaters tested, ten were in the younger category. Seven of the repeaters were boys.

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[2] I.B. King, "Effect of Age of Entrance into Grade I upon Achievement in Elementary School," Elementary School Journal, LV (February, 1955), pp. 331-336.

Comparison of the average daily attendance for the groups showed a mean difference of 17.6 more days of attendance for the older group. It was also found that the younger entrants showed more indications of poor personal and social adjustment in school.

The study would seem to indicate that having attained a few additional months of chronological age at the beginning of Grade I is an important factor in a child's ability to cope with the demands that the school necessarily makes upon him.

A study by Carter[3] of the effect of early school entrance on academic achievement indicates that the older child has the advantage over the younger one when given the same school experiences. The factor of chronological age was found to have more effect on boys in relation to achievement than on girls. According to this study, 87 percent of the underage children (less than 6 years on September 1) did not equal the scholastic achievement of normal age children (6 or more on September 1).

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[3] L.B. Carter, "The Effect of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools," Journal of Educational Research, L (October, 1956), pp. 91-103.

In a study of the school progress and adjustment of underage and overage students, Baer[4] matched 73 younger children (birthdays in November and December) with 73 older children (birthdays in January and February), all of whom had had kindergarten experience. It is interesting to note that the comparison was made in the eleventh year of school. The findings are summarized here.

> As a group, the overage children made better school progress than did the underage children. The overage children, from Kindergarten through Grade ten, made significantly higher marks in subjects, significantly higher scores on achievement tests in reading, arithmetic and social studies, were rated significantly higher on personal traits by their teachers and were significantly more successful in maintaining regular progression from grade level to grade level.[5]

It should be noted that the underage children made average school progress. However, since both groups were selected on the basis of intelligence (average IQ of each group about 111) "a better than average performance may legitimately be expected for either group on certain of the measures used."[6]

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[4] C.J. Baer, "The School Progress and Adjustment of Underage and Overage Students," Journal of Educational Psychology, XLIX (February, 1958), pp. 17-19.

[5] Ibid., p. 19.

[6] Ibid.

Halliwell and Stein[7] made a comparison of the achievement of early and late school starters in Grades IV and VI. The findings indicated that early starters were significantly poorer in achievement than were late starters. An interesting finding, similar to that reported by Baer, revealed that the mean grade level equivalents of the early starters, though inferior to those of the older group, were still above grade level. These researchers see important implications in this for schools adopting an individual approach to school entrance. Since many bright, though younger, children are succeeding in school, there may be some justification for admitting them early. Yet the results of the study would seem to indicate that although such children may do well compared with older children of less ability, they may not do nearly as well as older children of similar ability.

In reviewing the literature on entrance age and school success, Halliwell reports two studies, one by Birch,[8]

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[7] J.W. Halliwell and B.W. Stein, "A Comparison of the Achievement of Early and Late School Starters in Reading Related and Non-Reading Related Areas in Fourth and Fifth Grades," Elementary English, XLI (October, 1964), pp. 631-639.

[8] J.W. Birch, "Early Admission for Mentally Advanced Children," Exceptional Children, XXI (December, 1954), pp. 84-87, cited by J.W. Halliwell, "Reviewing the Reviews on Entrance Age and School Success," The Journal of Educational Research, L (May-June, 1966), pp. 395-401.

another by Cone,[9] recommending early admission for mentally advanced children. Birch found that the younger children made satisfactory progress, while Cone reports that the younger entrants made better grades than did the average children. Neither study, however, compared the achievement of early entrants with that of normal entrants of similar ability. Another study cited, that by Green and Simmons,[10] compared the actual achievement of the early entrants (mean IQ - 111) with their probable achievement had their admission to school been delayed. It was found that although in reading achievement, early entrants were approximately seven months behind children of similar IQ who had entered school at the normal age, they were three months ahead of what they probably would have been had their entrance been delayed. On the basis of this finding, these researchers concluded that the advantages of delayed entrance were not real. Halliwell disagreed. To him the fundamental question was whether early entrance was really worthwhile. He concluded his review of the research with this statement:

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[9] H.K. Cone, "Brookline Admits Them Early," Nation's Schools, LV (March, 1955), pp. 46-47, cited by J.W. Halliwell, "Reviewing the Reviews on Entrance Age and School Success," The Journal of Educational Research, L (May-June, 1966), pp. 395-401.

[10] D.R. Green and S.V. Simmons, "Chronological Age and School Entrance," Elementary School Journal, LXIII (October, 1962), pp. 41-47, cited by Halliwell, op. cit.

> In view of the facts, that at every grade level the early entrant is approximately seven months behind his control in achievement, that despite the extra year of school the early entrant is only three months superior in achievement to the regular entrant at a particular age . . . the advantages of postponing early entrance to first grade programs as they are presently conducted are very real.[11]

Bevington,[12] in a study of the effect of age at time of entrance into Grade I on subsequent reading achievement, found no significant difference between the underage entrants, admitted on the basis of mental age, and the normal age entrants who were unselected. An examination of the intelligence scores, however, revealed that the underage students were superior to the normal age students in mental ability. It might be expected, therefore, that they would have a higher standard of achievement. Bevington suggested that this inability of the underage students to reach higher standards could be attributed to the fact that they were a little younger. Hence they were not physically mature enough to reach levels of attainment commensurate with their

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[11] J.W. Halliwell, "Reviewing the Reviews on Entrance Age and School Success," The Journal of Educational Research, L (May-June, 1966), pp. 395-401.

[12] W.G. Bevington, "Effect of Age at Time of Entrance into Grade I on Subsequent Achievement," (unpublished Master's thesis, The University of Alberta, 1957).

mental abilities. Yet he concluded that chronological age at time of entrance had no effect on subsequent achievement.

Chronological age at entrance to Grade I may be of more significance for boys than for girls. It is a well-established physiological and psychological fact that boys usually develop more slowly than girls, yet the difference in maturity is not taken into account in setting entrance requirements. In an article entitled, "Let's Give Boys a Break", Pauley[13] suggests that if boys were admitted to school six months or so later than girls, there would be less frustration for boys, their parents, and their teachers, and there would be fewer dropouts in high school because of failing or unsatisfactory work. A study[14] by the same author revealed that boys consistently made lower grades, a fact which he attributes almost entirely to the slower maturation of boys. Similar findings have already been noted in Carter's study.

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[13] F.R. Pauley, "Let's Give Boys a Break!" Phi Delta Kappan, XL (April, 1959), pp. 281-83, cited by B.W. Cardon, "Sex Differences in School Achievement," The Elementary School Journal, LXVIII (May, 1968), pp. 427-433.

[14] _____, "Sex Differences and Legal School Entrance," Journal of Educational Research, XLV (September, 1951), pp. 1-9.

In a study[15] of the relationship between age of learning to read and sex, intelligence and reading achievement, Anderson, Hughes, and Dixon found that 52 percent of the girls learned to read at an age when children are normally in Grade I. The same was true for only 33.8 percent of the boys. Girls excelled boys on reading readiness tests, got off to an earlier start in reading, and retained their advantage throughout the grades. The researchers concluded that these sex differences are perhaps best explained by the fact that girls mature more rapidly than boys and hence become ready for reading sooner.

That girls have superior reading readiness skills even before school entrance is attested to by Carroll[16] and by Samuels,[17] who concluded that later differences may be due to those initial readiness differences. Balow,[18] too,

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[15] I.H. Anderson, B.O. Hughes, and W.R. Dixon, "Age of Learning to Read and Its Relation to Sex, Intelligence, and Reading Achievement in the Sixth Grade," Journal of Educational Research, XLIX (February, 1956), pp. 447-453.

[16] M.W. Carroll, "Sex Differences in Reading Readiness at the First Grade Level," Elementary English, XXV (October, 1948), pp. 370-75.

[17] F.L. Samuels, "Sex Differences in Reading Achievement," Journal of Educational Research, XXLVI (April, 1943), pp. 594-603.

[18] I. Balow, "Differences in First Grade Reading," Elementary English, XL (March, 1963), pp. 303-6.

found that girls tested significantly higher in reading readiness. Holding reading readiness constant, however, there were no significant differences in achievement between boys and girls.

Hall[19] made a study of retention (retardation) to determine whether entrance age affected achievement and whether the age factor was more critical for boys or girls. Of the 12,800 elementary school pupils in the area studied (the Highline School District of Seattle), 801 had been retained. Further investigation showed that three times as many boys as girls had been retained. Of the boys retained, 77.9 percent were underage (less than 6-6); the corresponding figure for girls was 80 percent. A further study of all third and sixth grade pupils showed that:

1. Girls achieved at a higher level than boys, particularly in reading and language arts.
2. Overage boys and girls (6-6 or more) achieved at a higher level than the underaged of their sex.

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[19] R.V. Hall, "Does Entrance Age Affect Achievement?", Elementary School Journal, LXIII (April, 1963), pp. 391-396.

3. The underaged boys achieved at a lower level than any other group--in some cases, they were two years behind the older girls.
4. Differences in achievement increased from the third to the sixth grade.[20]

On the basis of these results, Hall suggested delaying school entrance of boys from six months to a year.

Certain conclusions can be drawn from a review of these studies. That there is a difference in the achievement of boys and girls seems quite evident. Most studies indicate that in terms of chronological age, the older child (the normal age child) has the advantage over the younger child in reading achievement. The value of early admission to formal school programs seems questionable. While some researchers and educators favor early admission for able children, it is frowned on by others. Yet the problem of overplacement resulting from lack of school readiness does exist. Until adequate testing is made possible, Dr. Louise Bates Ames[21] of the Gesell Institute advocates making six the minimum age for entry into first grade. She states

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[20] Ibid., p. 394.

[21] C. Gerras, "School Too Soon Means Trouble," The Sign, May, 1967, pp. 11-13.

that this simple requirement would eliminate a potential source of unhappiness for millions of children. Children ready for first grade at an earlier age will lose nothing by waiting, while children who are not ready really need this delay to protect their future.

II. KINDERGARTEN AND ACHIEVEMENT

The effect of kindergarten experience on academic achievement has been the subject of much research. A number of such studies are reported by Worth, Fagan, and King.[22] Pratt[23] (1949) and Fast[24] (1957) found children with kindergarten experience to be superior, at the end of first grade, to children without such experience. Olson[25] (1962) investigated the effect of kindergarten experience on various phases of development including total readiness, academic

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[22] H.W. Worth, W.T. Fagan, and E.M. King, Before 6: A Report on the Alberta Early Childhood Education Study (Alberta: The Alberta School Trustees' Association, 1966).

[23] W.E. Pratt, "A Study of the Differences in the Prediction of Reading Success of Kindergarten and Non-Kindergarten Children," Journal of Educational Research, XLII (March, 1949), pp. 525-533, cited by Worth, et al., op. cit., p. 24.

[24] I. Fast, "Kindergarten Training and First Grade Reading," Journal of Educational Psychology, XLVIII (1957), pp. 52-57, cited by Worth, et al., loc. cit.

[25] L.C. Olson, "The Effects on Non-Public School Kindergarten Upon Pupils in the First Grade," Dissertation Abstracts, XXIII (1962), p. 889, cited by Worth, et al., loc. cit.

readiness, maturity, effort, citizen rating, and so on. Although the kindergarten children were found to be superior to the non-kindergarten children in total readiness, there were no significant differences between the groups for the other phases of development. A study by Fox[26] revealed that kindergarten experience does not significantly affect either school readiness or achievement in the primary grades. Haines[27] tested elementary pupils at various grade levels to determine the effect of kindergarten experience on achievement in the areas of reading and arithmetic. Although the arithmetic scores were significantly higher for the kindergarten group in Grades II and V, there were no significant differences in the reading scores of the kindergarten and non-kindergarten groups. The children studied were matched on intelligence. On the other hand, McHugh[28] evaluated the

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[26] R.B. Fox and M. Powell, "Evaluating Kindergarten Experiences," Reading Teacher, XVIII (November, 1964), pp. 118-120, cited by Worth, et al., op. cit., p. 25.

[27] L.E. Haines, "The Effect of Kindergarten Experience upon Academic Achievement in the Elementary Grades" (unpublished Doctoral dissertation, The University of Connecticut, 1960), cited by Worth, et al., op. cit., p. 28.

[28] L. McHugh, "An Evaluation of the Effectiveness of a Planned Kindergarten Program" (unpublished Doctoral dissertation, Boston University, 1959), cited by M. Mindess and A.V. Keliher, "Review of Research Related to the Advantages of Kindergarten," Childhood Education, XLIII (May, 1967), p. 508.

effectiveness of a planned kindergarten program and concluded that, at the end of Grade III, children who had been exposed to such a program were superior in both reading and arithmetic achievement to those who had not.

In studying the influence of early social environment on school adaptation, Deutsch[29] indicates that children who have had kindergarten experience are more likely to cope appropriately with the kinds of things the school demands intellectually than are children who have not had this experience. It was also shown that kindergarten or other pre-school experience was associated with higher group intelligence test scores.

In 1958-59, the British Columbia Department of Education conducted a study[30] of some 22,000 public-school children in the primary grades. The effect of kindergarten attendance was studied in relation to report card ratings, adaptation to the school situation, intelligence, achievement in Grade II, and retardation and acceleration in Grades I - III.

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[29] M. Deutsch, "Early Social Environment: Its Influence on School Adaptation," in D. Schreiber (ed.), The School Dropout (Washington: National Education Association, 1954), pp. 89-100, cited by B.S. Bloom, A. Davis and R. Hees, Compensatory Education For Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1966), p. 102.

[30] C.B. Conway, A Study of Kindergarten and Non-Kindergarten Children. Educational Research Institute of British Columbia, January, 1968.

Results showed that teachers' ratings were generally higher for kindergarten pupils. Adaptation to school was found to be related to kindergarten experience and to the sex factor, 60 percent of the well-adapted pupils being girls while 70 percent of the poorly-adapted pupils were boys. Intelligence also was found to be related to kindergarten experience. In achievement, girls outscored boys of the same mental age, the least superiority being in arithmetic. The kindergarten children were superior to non-kindergarten children, while the children from private kindergartens outscored those from public kindergartens. However, as noted in the study, the groups were not equated for home background, and no data were collected on the number of hours of kindergarten attendance, or on the amount of number work and reading done in the private kindergartens. In Grades I,II, and III, retardation figures were higher for non-kindergarten children of both sexes than for those with kindergarten experience.

Another study[31] by the same Department in 1959 involving the Grade VII population revealed only slight differences in achievement among comparable mental age groups. There were, however, some significant differences, all in favor of children with kindergarten experience.

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[31] British Columbia Department of Education, Achievement in Grade Seven Related to Kindergarten Attendance (Victoria: Division of Tests, Standards and Research, 1959), cited by Worth, et al., op. cit., pp. 27-28.

Studies related to the kindergarten factor are, then, as conflicting as those researching the age factor. We may, however, conclude that while there is considerable evidence that kindergarten experience has a positive influence on achievement there is no evidence that such experience has a harmful effect.

III. THE SOCIO-ECONOMIC FACTOR AND ACHIEVEMENT

Today, with the accent on education for all, there is much concern among educators and others about the influence of socio-economic status on the academic achievement of school pupils. This influence is reflected not only in academic success or failure, but in such related areas as attitudes towards education, career expectations and educational opportunity, intelligence, school attendance, dropouts and the like.

The cultural and social background of the family has a significant impact on attitudes towards education and hence an impact on the school achievement of the child. Parental attitudes, in particular, are of great importance in influencing the desire of the child to achieve in school. Parents often contribute to the educational process by helping children with their school work, and by providing information and experiences that supplement those that the

child is having in school. It is obvious, of course, that the level of participation of the parents in the teaching process depends on their educational level, and for this reason, children from higher socio-economic backgrounds are likely to have a significant advantage.

In comparing parental attitudes towards education with the family's socio-economic status, Stendler[32] found that lower-class parents failed to visit the school, when invited, to discuss their children's work, while middle-class parents were more inclined to do so, indicating more pressure for achievement at the middle-class level.

There is increasing evidence to show that academic failure is not just a matter of low intelligence and inadequate motivation but that a direct relationship exists between achievement and social position, with the failing group being drawn predominantly from the lower socio-economic groups. In assessing the effect of early environmental experiences in the learning process, Deutch[33] stated

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[32] C.B. Stendler, "Social Class Differences in Parental Attitudes Towards School at Grade Level," cited by T.E. Linton and D.F. Swift, "Social Class and Ninth Grade Educational Achievement," The Alberta Journal of Educational Research, IX (September, 1963), p. 159.

[33] M. Deutch, "The Disadvantaged Child and the Learning Process," in A.H. Passow (ed.), Education in Depressed Areas (New York: Teachers College, Columbia University, 1963), pp. 163-180, cited by Bloom, et al., Compensatory Education For Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1966), p. 101.

that the lower class child comes to the school situation so poorly prepared to cope with the demands the school makes upon him that initial failures are almost inevitable. Thus the school experience becomes negatively rather than positively reinforced.

Sexton[34] (1961) found achievement and IQ test scores to be directly related to family income, low income being associated with low scores. A study[35] carried out by Linton and Swift of the University of Alberta found a strong relationship between social class and the IQ of the student, between social class and school performance. The major findings of the study are summarized here:

1. There is a strong relationship between social class and school performance.
2. Sons of manual workers have a relatively poor chance of successful academic achievement.
3. There appears to be a relationship between joint parental income and school performance within the social class.

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[34] P. Sexton, Education and Income (New York: Viking Press, 1961), cited by T.E. Linton and D.F. Swift, "Social Class and Ninth Grade Educational Achievement," The Alberta Journal of Educational Research, IX (September, 1963), p. 159.

[35] Linton and Swift, op. cit., pp. 157-167.

Bloom[36] cites research that has demonstrated that for children growing up under adverse conditions, the IQ may be depressed by a significant amount and that intervention at certain points, especially in the period from ages three to nine, can raise the IQ by as much as fifteen points. He suggests that the aspects of the home environment which seem to be more significant in affecting the level of measured intelligence and the achievement of the child may be described as "involving provisions for general learning, models and helps in language development and parental stimulation and concern for achievement and learning on the part of the child."[37] It is, then, the adults in the home who seem to stimulate the child's intellectual development. If, however, as research indicates, a large proportion of our students come from homes in which the adults have a minimal level of education, from homes in which there is very little interaction between children and adults, both the intellectual development and the language development so essential to school progress suffers. Awareness of this has led to many compensatory types of programs, such as

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[36] B.S. Bloom, A. Davis and R. Hees, Compensatory Education For Cultural Deprivation (New York: Holt, Rinehart and Winston, Inc., 1966), p. 12.

[37] Ibid.

Headstart in the United States, designed "as a means of having disadvantaged children overcome the handicap of not having experiences in their out-of-school environment" which stimulate them to develop mentally, emotionally and socially "to the level that would be considered normal for their chronological age."[38]

That enriched pre-school experiences for lower-class children do have beneficial effects is attested to by a number of studies. Strodbeck[39] found that IQ scores of culturally disadvantaged children were raised 6.9 points and verbal intelligence 20 points or more after only thirteen weeks of stimulating nursery school experience. A study of the Baltimore Headstart Program reported by the same author showed that children gained significantly in intelligence (8 - 10 points) in a period of six weeks.

Hill and Giammatteo,[40] investigating the relationship between socio-economic status and school achievement, found

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[38] Worth, et al., op. cit., p. 53.

[39] F.L. Strodbeck, "The Reading Readiness Nursery: Short-Term Social Intervention Technique, Summary of Progress Report" (Chicago: Social Psychology Laboratory, University of Chicago, 1963, mimeographed), cited by Mindess and Keliher, op. cit., p. 506.

[40] E.H. Hill and M.C. Giammatteo, "Socio-economic Status and its Relationship to School Achievement in the Elementary School," Elementary English, XL (March, 1963), pp. 265-270.

that children from high socio-economic backgrounds were eight months ahead of children from low socio-economic families in vocabulary and eleven months in problem solving. The overall average showed a difference of seven months between the groups.

Curry[41] compared the achievement of children of similar intelligence but differing socio-economic status. Although there were no significant differences in the scholastic achievement of pupils of high intelligence in the various socio-economic groups, as intellectual ability decreased from high to low, the effect of social and economic conditions on achievement increased greatly.

The studies cited here would seem to indicate that the socio-economic factor is, indeed, a crucial one, affecting not only attitudes towards education, but also the intelligence level and the school achievement of the pupil.

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[41] R.L. Curry, "The Effect of Socio-economic Status on the Scholastic Achievement of Sixth-Grade Children," British Journal of Educational Psychology, XXXII (1962), pp. 46-49, cited by Bloom, et al., op. cit., p. 96.

IV. CONCLUSION

Review of the literature and related studies thus leads one to conclude that, of the many factors involved in the learning process, age at time of entrance, kindergarten experience or the lack of it, sex, and the socio-economic background of the family are factors whose importance should not be underestimated.

CHAPTER III

COLLECTION AND TREATMENT OF THE DATA

This chapter describes the procedure in selecting the sample, the collection of the data, and the treatment of the data.

I. SELECTION OF THE SAMPLE

From those schools in the St. John's systems whose entrance age is set at six years by December 31 of the school year, a number of students were s elected by stratified random sampling. The schools were classified as kindergarten and non-kindergarten schools and further sub-divided into boys' schools, girls' schools, and co-educational schools. This was necessary in order to ensure an approximately equal number of kindergarten and non-kindergarten children of both sexes. Fourteen schools were selected from the twenty-six available.

The initial information was gathered in April, 1968. From the cumulative records, the writer collected the names of all pupils born January - April, September - December, 1959, who had entered Grade I in September of 1965 and were, at the time of testing, in Grade III. Also included were children in the same age group who had repeated, or who were repeating, a grade. Children who had attended nursery school were excluded from the study. Other information obtained

from the cumulative records included the occupation of the father, and whether or not the child had attended kindergarten. The information on the father's occupation was later checked, where necessary, with the child or with the teacher. Comparable data were collected for the eleven-year-olds at the Grade VI level. At this point, the sample consisted of 356 eight-year-olds, 40 of whom were classified as repeaters, and 293 eleven-year-olds, 65 of whom were repeaters. The final sample consisted of 320 eight-year-olds, 33 of whom were repeaters, and 273 eleven-year-olds, 57 of whom were repeaters, the remainder in both groups being absent or otherwise unavailable for testing.

Grade III was chosen because it marks the end of the primary grades. By the time a child finishes Grade III, he should have acquired the basic reading skills to a degree which will ensure success in reading. Grade VI was chosen because in at least some of the schools used in the study, it marks the end of the elementary grades, the pupils transferring to Junior High School in Grade VII. By the end of Grade VI, a pupil should have extended and consolidated the basic skills acquired in the primary grades.

II. COLLECTION OF THE DATA

For purposes of this study, the Lorge-Thorndike Intelligence Test, Levels Two and Three, was used to assess

the intelligence of the pupils. This test received a favourable rating in the Sixth Mental Measurements Yearbook (Buros, 1965). It was also recommended by persons who had used the test previously. The tests in Level Two use only pictorial type items. At Level Three, the verbal battery is made up of sub-tests using only verbal items. The non-verbal battery uses items which are either pictorial or numerical.

The Revised Nelson Reading Achievement Test, Form A, was used to assess reading achievement. It was chosen because of the high rating given it locally by users of the test, and on the basis of a review by Robinson in the Sixth Mental Measurements Yearbook (Buros, 1965). The review describes the test as a rough measure of reading achievement rather than a diagnostic instrument. Since this study is concerned with overall reading achievement rather than with diagnosing specific weaknesses, the test appears to be an adequate measure.

Because there were suggestions that the Nelson may be unsuitable for Grade III due to the requirement that answer sheets be used, a pilot study was undertaken in two Grade III classes in one of the city schools. One group was given Form A using the answer sheets, the other Form B using test booklets. Although those using Form B obtained more high

scores than did the pupils taking Form A, the latter had no difficulty in using the answer sheets. The higher scores for users of Form B could have been due to a higher intelligence level or to the fact that these children could complete more of the test since they could put their answers directly in the test booklet. However, neither of these possibilities was investigated because the writer was interested only in whether or not the eight-year-olds could use the answer sheets without difficulty.

The testing was carried out by the writer during a four to five week period in May, 1968. The Lorge-Thorndike Intelligence Test, Level Two, non-verbal battery, was administered to Grade III pupils and to those designated as repeaters. Both the verbal and the non-verbal batteries were administered to Grade VI pupils and repeaters at this level. The tests were then scored and the results tabulated.

III. TREATMENT OF THE DATA

A descriptive analysis of the data for the sample as a whole follows in Chapter IV. In this analysis, as in the statistical analysis described later, the pupils are divided into categories of age, grade, sex, kindergarten experience, and socio-economic status. The IQ scores, the grade level attained in reading, and the percentage reading below the

norm are given for each group. This analysis also includes such information as the number of repeaters in the various categories of age, sex, kindergarten experience, and socio-economic status.

The statistical technique used in the study is analysis of covariance. Use of this technique necessitated a reduction in the size of the sample in order to have an equal number of cases in the subclasses. This analysis enabled the researcher to sort out the effects of some of the variables while controlling for others. Since the children were not matched on mental ability, it was decided to control for intelligence, leaving the influence of age, kindergarten, sex, and socio-economic status to be investigated. Controlling for intelligence involves adjusting the mean achievement score to what it would have been had the children been equated on mental ability. A significance test, the F test, was applied to ascertain whether the mean adjusted difference was sufficiently large to have arisen from causes other than chance. The .05 level of confidence was selected as the level at which a difference was accepted as significant.

CHAPTER IV

DESCRIPTIVE ANALYSIS OF THE DATA

The purpose of this chapter is to provide a descriptive analysis of the data. No attempt will be made, at this stage, to ascertain whether or not the differences in the reading achievement of the various groups are statistically significant. Section I provides data on the reading achievement of early and late entrants of both sexes, their IQ scores, and the percentage reading below the norm. Section II provides data on the reading achievement of kindergarten pupils in relation to the factors of age and sex. The IQ scores and the percentage reading below the norm are also given. Data on the reading achievement of pupils in terms of socio-economic status, age at entrance, and kindergarten experience are given in Section III. Data on the number of repeaters in the various categories of age, sex, kindergarten, and socio-economic status are given in Section IV. Mean scores are used throughout this chapter.

I. AGE AT ENTRANCE AND READING ACHIEVEMENT

The composition of the sample in terms of sex, and age at entrance is shown in Table I. As already stated, the sample at time of testing consisted of 320 eight-year-olds

TABLE I

NATURE OF THE SAMPLE

	Eight-year-olds	Eleven-year-olds
Boys		
Early Entrants	84	62
Late Entrants	86	73
Girls		
Early Entrants	75	77
Late Entrants	75	61
Total		
Early Entrants	159	139
Late Entrants	161	134
Total	320	273

and 273 eleven-year-olds. The eight-year-olds were made up of 170 boys and 150 girls. Of the boys, 84 were classified as early entrants and 86 as late entrants. There were 75 girls classified as early entrants and 75 as late entrants. The eleven-year-olds were made up of 135 boys and 138 girls. Of the boys, 62 were early entrants, and 73 were late entrants; 77 girls were early entrants and 61 were late entrants.

Table II gives the IQ scores, the reading level, and the percentage reading below the norm for the eight-year-olds grouped in terms of sex and age at entrance. Although a difference of only two months exists between the reading achievement of early and late boys, and the early and late girls, 47.2 percent of the early boys were reading below the norm compared with 36 percent for the late boys. The corresponding figures for early and late girls are 40 percent and 37.3 percent. It is interesting to note that, of the four groups, the late girls scored lowest in intelligence and highest in terms of reading achievement. If we disregard sex, and group the pupils in terms of age only, we see that the early entrants are just two months behind the late entrants in reading and have 6.9 percent more reading below the norm than do the late entrants. The early entrants are slightly superior to the late entrants in intelligence.

TABLE II

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-YEAR-OLDS IN TERMS OF SEX, AND AGE AT TIME OF ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
Boys			
Early Entrants	97.2	4.0	47.2
Late Entrants	97.4	4.2	36.0
Girls			
Early Entrants	98.2	4.1	40.0
Late Entrants	94.0	4.3	37.3
Total			
Early Entrants	97.7	4.1	43.6
Late Entrants	95.7	4.3	36.7

Norm = 3.9

*Mean Scores

Table III gives the IQ scores of the various groups of eleven-year-olds, the reading level attained by each group, and the percentage in each group reading below the norm. As can be readily seen, there are only slight differences between the IQ scores of the four groups. However, there is a difference of six months between the reading achievement of early and late boys, and a difference of five months between the reading achievement of early and late girls. The early boys have 59.7 percent reading below the norm, compared with 43.8 percent for late boys. The corresponding figures for early and late girls are 54.6 and 39.3. The early boys are reading two months below the norm. The other groups are reading at, or beyond the norm. If we disregard sex, and group the pupils in terms of age only, we see that the early entrants are reading six months behind late entrants of similar intelligence and have 15.6 percent more reading below the norm than do the late entrants.

II. KINDERGARTEN AND READING ACHIEVEMENT

The composition of the sample in terms of kindergarten experience, sex, and age at entrance, is shown in Table IV. Of the 320 eight-year-olds tested, 157 had had kindergarten experience and 163 had not. There were 170 boys and 150

TABLE III

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR ELEVEN-YEAR-OLDS IN TERMS OF SEX, AND AGE AT TIME OF ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
Boys			
Early Entrants	105.6	6.7	59.7
Late Entrants	106.8	7.3	43.8
Girls			
Early Entrants	105.3	6.9	54.6
Late Entrants	104.7	7.4	39.3
Total			
Early Entrants	105.3	6.8	57.2
Late Entrants	105.8	7.4	41.6

Norm = 6.9

*Mean Scores

TABLE IV

COMPOSITION OF THE SAMPLE OF EIGHT-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, SEX, AND AGE AT ENTRANCE

	Kindergarten	Non-Kindergarten
Boys		
Early Entrants	36	48
Late Entrants	41	45
Total	77	93
Girls		
Early Entrants	41	34
Late Entrants	39	36
Total	80	70
Total		
Early Entrants	77	82
Late Entrants	80	81
Total	157	163

girls. Of the boys, 77 had attended kindergarten, 93 had not; 80 of the girls had attended kindergarten, 70 had not.

Table V gives the IQ scores, reading level, and the percentage reading below the norm for the eight-year-olds grouped according to kindergarten experience, sex, and age at time of entrance. As can be seen, the kindergarten boys, both early and late entrants, score alike on intelligence and on reading. However, the early entrants have a higher percentage reading below the norm than do the late entrants. Similarly, the kindergarten girls, both early and late entrants, score alike on reading, but the late entrants have a lower IQ and a higher percentage reading below the norm. In the non-kindergarten group, the boys, both early and late entrants, have similar IQ's. However, the early entrants are three months behind the late entrants in reading achievement, and have 14.1 percent more reading below the norm than do the late entrants. In the non-kindergarten girls group, the early entrants have a slightly higher IQ, score four months behind the late entrants in reading achievement, and have 9.5 percent more reading below the norm than do the late entrants. The non-kindergarten early entrants of both sexes are reading below the norm.

If we disregard sex, and group the pupils in kindergarten and non-kindergarten groups, we see that, as shown

TABLE V

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, SEX, AND AGE AT ENTRANCE

	IQ*	Grade level in reading*	Percentage readi below the norm
Boys			
Early Entrants K	102.5	4.5	33.3
Late Entrants K	102.5	4.5	29.3
Early Entrants NK	91.8	3.6	56.3
Late Entrants NK	92.3	4.0	42.2
Girls			
Early Entrants K	102.4	4.4	26.8
Late Entrants K	96.3	4.4	28.2
Early Entrants NK	94.6	3.7	55.9
Late Entrants NK	91.7	4.1	46.4

Norm = 3.9

*Mean Scores

in Table VI, the early and late entrants with kindergarten experience score alike on reading achievement. There is a slight difference in IQ favouring the early entrants. There is also a slight difference in percentage reading below the norm, favouring the late entrants. In the non-kindergarten group, the early entrants are four months behind the late entrants in reading achievement and have 11.3 percent more reading below the norm than do the late entrants. There is a very slight difference in intelligence favouring the early entrants.

The composition of the sample of eleven-year-olds grouped in terms of kindergarten experience, sex and age at entrance, is shown in Table VII. Of the 273 children at this age level, 111 had attended kindergarten and 162 had not. There were 135 boys and 138 girls. Of the boys, 49 had attended kindergarten and 86 had not; 62 of the girls had attended kindergarten while 76 had not.

Table VIII gives the IQ scores, reading level, and percentage reading below the norm for the eleven-year-olds grouped according to kindergarten experience, sex and age at entrance. As can be seen from the table, the kindergarten boys who had entered early are five months behind the late entrants in reading achievement and have 10.6 percent more reading below the norm than do the late entrants. There is

TABLE VI

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage readin below the norm
Kindergarten			
Early Entrants	102.5	4.5	29.9
Late Entrants	99.4	4.5	28.8
Non-Kindergarten			
Early Entrants	93.2	3.7	56.1
Late Entrants	92.0	4.1	44.8

Norm = 3.9

*Mean Scores

TABLE VII

COMPOSITION OF THE SAMPLE OF ELEVEN-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, SEX, AND AGE AT ENTRANCE

	Kindergarten	Non-Kindergarten
Boys		
Early Entrants	16	46
Late Entrants	33	40
Total	49	86
Girls		
Early Entrants	34	43
Late Entrants	28	33
Total	62	76
Total		
Early Entrants	50	89
Late Entrants	61	73
Total	111	162

TABLE VIII

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR ELEVEN-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, SEX, AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage read below the nor
Boys			
Early Entrants K	107.4	7.1	50.0
Late Entrants K	109.0	7.6	39.4
Early Entrants NK	102.7	6.5	63.0
Late Entrants NK	104.5	6.9	47.5
Girls			
Early Entrants K	106.1	7.3	41.2
Late Entrants K	108.3	8.0	25.0
Early Entrants NK	104.5	6.6	65.1
Late Entrants NK	101.1	7.0	51.5
		Norm = 6.9	

*Mean Scores

a slight difference in intelligence favouring the late entrants. In the kindergarten girls group, the early entrants are seven months behind the late entrants in reading achievement and have 16.2 percent more reading below the norm than do the late entrants. Here, also, a slight difference in intelligence favours the late entrants. In the non-kindergarten group, the early boys are four months behind the late boys in reading achievement, and have 15.5 percent more reading below the norm than do the late entrants. A small difference in intelligence favours the late entrants. In the non-kindergarten girls group, the early entrants are four months behind the late entrants in reading achievement and have 13.6 percent more reading below the norm than do the late entrants. The early entrants score slightly higher than the late entrants in intelligence. In the non-kindergarten groups, the early entrants of both sexes are reading below the norm.

If we disregard sex and categorize pupils into kindergarten and non-kindergarten groups according to age at entrance, we have the situation shown in Table IX. The early entrants with kindergarten experience, although slightly superior to the late entrants in intelligence, are six months behind them in reading achievement, and have 11.2 percent more reading below the norm than do the late entrants.

TABLE IX

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR ELEVEN-YEAR-OLDS GROUPED ACCORDING TO KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
Kindergarten			
Early Entrants	111.8	7.2	44.0
Late Entrants	108.7	7.8	32.8
Non-Kindergarten			
Early Entrants	103.6	6.6	65.2
Late Entrants	102.8	7.0	49.3
		Norm = 6.9	

*Mean Scores

The early entrants who did not attend kindergarten are four months behind the late entrants in reading achievement, and have 15.9 percent more reading below the norm than do the late entrants. There is a slight difference in intelligence favouring the early entrants.

Table X gives a summary of the reading achievement of the whole sample of eight-and eleven-year-olds grouped solely on the basis of kindergarten or the lack of it. The IQ scores and the percentage reading below the norm are also given. At the eight-year-old level, the non-kindergarten group is 8.4 points below the kindergarten group in intelligence, six months behind them in reading, and has 21.1 percent more reading below the norm than does the kindergarten group. At the eleven-year-old level, the non-kindergarten group is 7.1 points below the kindergarten group in intelligence, seven months behind them in reading achievement, and has 18.9 percent more reading below the norm than does the kindergarten group.

Could the fact that at both levels the kindergarten group is superior to the non-kindergarten group in intelligence be attributed to the influence of the kindergarten year or to the influence exercised by the socio-economic background of the child? The next section provides some data relevant to this question.

TABLE X

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-AND ELEVEN-YEAR-OLDS, KINDERGARTEN AND NON-KINDERGARTEN

	IQ*	Grade level in Reading*	Percentage reading below the norm
Eight-Year-Olds			
Kindergarten	101.0	4.5	29.4
Non-Kindergarten	92.6	3.9	50.5
Eleven-Year-Olds			
Kindergarten	110.3	7.5	38.4
Non-Kindergarten	103.2	6.8	57.3

*Mean Scores

III. SOCIO-ECONOMIC STATUS AND READING ACHIEVEMENT

In all, a total of 593 children were tested. These came from every socio-economic level on the Blishen Scale. As already explained in Chapter I, classes 1 to 4 on the scale are classified as high socio-economic status (high SES), and classes 5 to 7 as low socio-economic status (low SES).

Table XI gives the composition of the sample in terms of socio-economic status, and age at entrance. A total of 105 of the eight-year-olds and 81 of the eleven-year-olds are from high socio-economic backgrounds, while 215 eight-year-olds and 192 eleven-year-olds are from low socio-economic backgrounds.

Table XII gives the IQ scores, reading level, and percentage reading below the norm for eight-year-olds grouped according to socio-economic status and age at entrance. In the high SES group, the pattern established for age at entrance is reversed, the early entrants being four months ahead of the late entrants in reading achievement and having 11 percent less reading below the norm than do the late entrants. A slight difference in intelligence favours the early entrants. In the low SES group, however, the early entrants, although superior to the late entrants

TABLE XI

COMPOSITION OF THE SAMPLE IN TERMS OF SOCIO-ECONOMIC STATUS AND AGE AT ENTRANCE

	Eight-year-olds	Eleven-year-olds
High SES		
Early Entrants	56	37
Late Entrants	49	44
Total	105	81
Low SES		
Early Entrants	103	102
Late Entrants	112	90
Total	215	192
Total	320	273

TABLE XII

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-YEAR-OLDS GROUPED ACCORDING TO SOCIO-ECONOMIC STATUS AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
High SES			
Early Entrants	103.8	4.8	19.6
Late Entrants	100.3	4.4	30.6
Low Ses			
Early Entrants	94.4	3.6	56.3
Late Entrants	90.9	4.1	39.3
		Norm = 3.9	

*Mean Scores

in intelligence, are five months behind them in reading achievement, and have 17 percent more reading below the norm than do the late entrants.

Table XIII gives the IQ scores, reading level, and percentage reading below the norm for the eleven-year-olds. In the high SES group, the early entrants are three months behind the late entrants in reading achievement, and have 7.8 percent more reading below the norm than do the late entrants. In the low SES group, the difference between the reading achievement of the early and late entrants is greater, the early entrants being nine months behind the late entrants and having 20.1 percent more reading below the norm than do the late entrants. The IQ scores for early and late entrants in the high SES group are similar, as are the scores for the early and late entrants in the low SES group.

A breakdown of the total sample into categories of socio-economic status, kindergarten experience, and age at entrance is given in Table XIV. At the eight-year-old level, there were 105 children in the high SES bracket, 74 of whom had attended kindergarten. There were 215 children in the low SES bracket, 83 of whom had attended kindergarten. At the eleven-year-old level, there were 81 children in the high SES bracket, 51 of whom had attended kindergarten.

TABLE XIII

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR ELEVEN-YEAR-OLDS GROUPED ACCORDING TO SOCIO-ECONOMIC STATUS AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
High SES			
Early Entrants	111.6	7.8	35.1
Late Entrants	112.7	8.1	27.3
Low SES			
Early Entrants	102.1	6.1	65.7
Late Entrants	101.4	7.0	45.6
		Norm = 6.9	

*Mean Scores

TABLE XIV

COMPOSITION OF THE SAMPLE IN TERMS OF SOCIO-ECONOMIC STATUS, KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	Eight-year-olds	Eleven-year-olds
High SES		
Early Entrants K	39	19
Late Entrants K	35	32
Early Entrants NK	17	18
Late Entrants NK	14	12
Total	105	81
Low SES		
Early Entrants K	38	31
Late Entrants K	45	29
Early Entrants NK	65	71
Late Entrants NK	67	61
Total	215	192
Total	320	273

There were 192 children in the low SES bracket, 60 of whom had attended kindergarten.

Table XV gives the IQ scores, reading level, and percentage reading below the norm for the eight-year-olds grouped according to socio-economic status, kindergarten experience, and age at entrance. The early entrants in the high SES bracket who had attended kindergarten score higher than any other group on both intelligence and reading. Compared with the late entrants in the same bracket, they are 4.9 points ahead in intelligence and five months in reading achievement, and have 12.5 percent less reading below the norm than do the late entrants. Similarly, these early entrants without kindergarten experience are two months ahead of the late entrants in reading and have 7.6 percent less reading below the norm than do the late entrants. The two groups are alike on intelligence. There is a four-month difference between the reading achievement of the early entrants in the kindergarten and non-kindergarten groups favouring the kindergarten group. The early entrants who attended kindergarten have 12.5 percent reading below the norm compared with 35.3 percent for the non-kindergarten group. There is a three-month difference between the reading achievement of the late entrants in the kindergarten and non-kindergarten groups. The late entrants with

TABLE XV

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-YEAR-OLDS GROUPED IN TERMS OF SOCIO-ECONOMIC STATUS, KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
High SES			
Early Entrants K	105.1	4.9	12.8
Late Entrants K	100.2	4.5	25.7
Early Entrants NK	100.7	4.4	35.3
Late Entrants NK	100.4	4.2	42.9
Low SES			
Early Entrants K	99.7	4.0	47.4
Late Entrants K	90.3	4.2	31.1
Early Entrants NK	91.3	3.3	61.5
Late Entrants NK	92.7	4.1	44.8

Norm = 3.9

*Mean Scores

kindergarten have 25.7 percent reading below the norm compared with 42.9 percent for the non-kindergarten group.

A study of the data for the low SES group reveals that late entrants, both kindergarten and non-kindergarten pupils, surpass early entrants in reading achievement. The early entrants with kindergarten experience, although superior in intelligence by 9.4 points, are two months behind the late entrants in reading and have 16.3 percent more reading below the norm than do the late entrants. The early entrants without kindergarten experience are eight months behind the late entrants in reading and have 16.7 percent more reading below the norm than do the late entrants. The IQ scores are similar for both groups.

There is a seven-month difference between the reading achievement of the early entrants in the kindergarten and non-kindergarten groups. A difference of just one month exists between the reading achievement of the late entrants in the kindergarten and non-kindergarten groups. The early entrants who attended kindergarten have 47.4 percent reading below the norm compared with 61.5 percent for the early entrants without kindergarten experience. The late entrants who attended kindergarten have 31.1 percent reading below the norm compared with 44.8 percent for the late entrants without kindergarten experience.

At the eleven-year-old level, there were 81 children in the high SES bracket, 51 of whom had attended kindergarten. There were 192 children in the low SES bracket, 60 of whom had attended kindergarten.

Table XVI gives the IQ scores, reading level, and percentage reading below the norm for the eleven-year-olds grouped according to socio-economic status, kindergarten experience, and age at entrance. The late entrants in the high SES group who had attended kindergarten surpass every other group in reading achievement. However, they have a slightly larger percentage reading below the norm than do the early entrants. The two groups are similar in intelligence. In the non-kindergarten group, the early and late entrants score alike on reading achievement and have similar IQ's. The early entrants have a slightly larger percentage reading below the norm than do the late entrants. The early entrants with kindergarten experience have 15.8 percent reading below the norm compared with 55.6 percent for the early entrants without kindergarten. The late entrants who attended kindergarten have 18.8 percent reading below the norm compared with 50.0 percent for the late entrants without kindergarten experience. All groups in the high SES bracket are reading beyond the norm.

TABLE XVI

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR ELEVEN-YEAR-OLDS GROUPED IN TERMS OF SOCIO-ECONOMIC STATUS, KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	IQ*	Grade level in Reading*	Percentage reading below the norm
High SES			
Early Entrants K	112.1	8.1	15.8
Late Entrants K	113.9	8.4	18.8
Early Entrants NK	111.1	7.5	55.6
Late Entrants NK	109.3	7.5	50.0
Low SES			
Early Entrants K	103.1	6.7	61.3
Late Entrants K	101.1	7.2	48.3
Early Entrants NK	101.7	6.3	67.6
Late Entrants NK	101.5	6.9	44.4

Norm = 6.9

*Mean Scores

In the low SES group, the late entrants with kindergarten experience are five months ahead of the early entrants in reading achievement and have 13 percent fewer reading below the norm than do the early entrants. Similarly in the non-kindergarten group, the late entrants are six months ahead of the early entrants in reading and have 23.2 percent less reading below the norm than do the early entrants. The early entrants who attended kindergarten have 61.3 percent reading below the norm compared with 67.6 percent for the early entrants without kindergarten experience. The late entrants who attended kindergarten have 48.3 percent reading below the norm compared with 44.4 for the late entrants without kindergarten experience. Only the early entrants, both kindergarten and non-kindergarten, are reading below the norm.

Table XVII gives a summary of the reading achievement of the whole sample of eight-and eleven-year-olds grouped solely on the basis of the socio-economic status of the family. At the eight-year-old level, the children from high socio-economic backgrounds are superior in intelligence to those from low socio-economic backgrounds by 8.1 points and are six months ahead of them in reading achievement. The high SES group has 24.8 percent reading below the norm compared with 49.3 for the low SES group. At the eleven-year-

TABLE XVII

IQ SCORES, READING LEVEL, AND PERCENTAGE READING BELOW THE NORM FOR EIGHT-AND ELEVEN-YEAR-OLDS GROUPED ACCORDING TO SOCIO-ECONOMIC STATUS

	IQ*	Grade level in Reading*	Percentage reading below the norm
Eight-year-olds			
High SES	101.6	4.5	24.8
Low SES	93.5	3.9	49.3
Eleven-year-olds			
High SES	111.6	7.9	30.9
Low SES	101.9	6.8	65.7

*Mean Scores

old level, the children from high socio-economic backgrounds are superior in intelligence to those from low socio-economic backgrounds by 9.7 points and are nine months ahead of them in reading achievement. The high SES group has 30.9 percent reading below the norm compared with 65.7 percent for the low SES group.

IV. REPEATERS

As stated in Chapter I, the sample at the time of testing included a number of eight-and eleven-year-olds who had entered Grade I at the same time as the Grade III students and Grade VI students being tested but who had repeated or were repeating a grade. Table XVIII shows that there were 33 repeaters, 22 boys and 11 girls, among the eight-year-olds. Of the boys, 15 are classified as early entrants and 7 as late entrants. Of the girls, 8 are early entrants and 3 are late entrants. There are twice as many boys as girls repeating at this level. Of the eleven-year-olds, 57 are repeaters. At this level, there are more girls than boys among the repeaters, 27 boys as compared to 30 girls. Of the boys, 16 had entered school early and 11 had entered late; 20 of the girls had entered early and 10 had entered late.

Table XIX gives the number of repeaters grouped on the basis of kindergarten experience and age at time of entrance.

TABLE XVIII

REPEATERS INCLUDED IN THE STUDY IN TERMS OF SEX, AND AGE AT TIME OF ENTRANCE

	Number of Repeaters	
	Eight-year-olds	Eleven-year-olds
Boys		
Early Entrants	15	16
Late Entrants	7	11
Total	22	27
Girls		
Early Entrants	8	20
Late Entrants	3	10
Total	11	30
Total		
Early Entrants	23	36
Late Entrants	10	21
Total	33	57

TABLE XIX

REPEATERS INCLUDED IN THE SAMPLE GROUPED IN TERMS OF KINDERGARTEN EXPERIENCE AND AGE AT ENTRANCE

	Number of Repeaters	
	Eight-year-olds	Eleven-year-olds
Kindergarten		
Early Entrants	7	6
Late Entrants	2	5
Total	9	11
Non-Kindergarten		
Early Entrants	16	30
Late Entrants	8	16
Total	24	46
Total		
Early Entrants	23	36
Late Entrants	10	21
Total	33	57

Of the 33 eight-year-olds, 9 had attended kindergarten and 24 had not. There are 7 early entrants and 2 late entrants in the kindergarten group of repeaters. In the non-kindergarten group, there are 16 early entrants and 6 late entrants repeating a grade. Of the eleven-year-olds, 11 had attended kindergarten and 46 had not. In the kindergarten group, there are 6 early entrants and 5 late entrants repeating a grade. In the non-kindergarten group, there are 30 early entrants and 16 late entrants who are repeating a grade.

Table XX shows the number of eight-and eleven-year-old repeaters grouped on the basis of socio-economic status, kindergarten experience, and age at entrance. In the high socio-economic group, there are 3 eight-year-old repeaters--2 early entrants with kindergarten experience, and 1 late entrant who had not attended kindergarten. In the low socio-economic group, there are 30 repeaters. Of these, 21 are early entrants--5 with kindergarten experience and 7 without such experience. In the eleven-year-old group, there are 8 repeaters in the high socio-economic bracket; 5 of these are early entrants who had attended kindergarten. In the low socio-economic group, there are 30 early entrants repeating; 5 of these had attended kindergarten and 25 had not. There are 19 late entrants repeating a grade; 4 of

TABLE XX

REPEATERS INCLUDED IN THE SAMPLE GROUPED IN TERMS OF SOCIO-ECONOMIC STATUS, KINDERGARTEN EXPERIENCE, AND AGE AT ENTRANCE

	Number of Repeaters	
	Eight-year-olds	Eleven-year-olds
High SES		
Early Entrants K	2	1
Late Entrants K	-	1
Early Entrants NK	-	5
Late Entrants NK	1	1
Total	3	8
Low SES		
Early Entrants K	5	5
Late Entrants K	2	4
Early Entrants NK	16	25
Late Entrants NK	7	15
Total	30	49
Total		
Early Entrants	23	36
Late Entrants	10	21
Total	33	57

these had attended kindergarten and 15 had not. There are 79 repeaters in the low SES group compared with 11 repeaters in the high SES group.

V. SUMMARY

In this chapter, a descriptive analysis of the data has been presented. No attempt has been made to hold certain variables constant or to check for significant differences. This will be done in Chapter V.

In summary, it would seem that the factors of age at entrance, sex, kindergarten experience, and the socio-economic status of the family do influence the reading achievement of children. In general, the late entrants surpassed the early entrants in reading achievement. Similarly, the children with kindergarten experience surpassed those without this experience, and those from high socio-economic background surpassed those from low socio-economic background. It should be noted that, in general, the children without kindergarten experience came from low socio-economic homes. They were also the lowest of the groups in intelligence. The fact that, at the eight-year-old level, early entrants in the high SES bracket scored higher on reading than did the late entrants may be the result of slightly higher intelligence on the part of the

early entrants, or it may indicate that age at entrance may have less significance for children from high socio-economic homes. The importance of the kindergarten year to success in reading may be indicated by the fact that the non-kindergarten pupils at both socio-economic levels, and particularly in the high SES bracket, had a much larger percentage reading below the norm than did the kindergarten pupils in the same SES bracket. The fact that the percentage of low SES pupils reading below the norm was more than twice that of high SES pupils indicates the influence of the socio-economic factor on reading achievement. Finally, the repeaters included in the sample, were, for the most part, children who had entered school early, children who had not attended kindergarten, and children from low socio-economic homes.

CHAPTER V

STATISTICAL ANALYSIS OF THE DATA

In this chapter, the results of the statistical analysis are described and discussed. Mean scores are used throughout the chapter.

I. INTRODUCTION

As has been already stated, a total of 593 children were tested. Of these, 310 were eight-year-olds and included 33 repeaters; 273 were eleven-year-olds and included 57 repeaters. For purposes of statistical analysis, it was decided to exclude the repeaters from the study. Table XXI shows the remaining 187 eight-year-olds and 216 eleven-year olds divided into categories of grade, age at entrance, socio-economic status, and kindergarten experience.

As can be readily seen from the table, there are, for each grade, sixteen groups of unequal N's to be compared on four variables. To facilitate the analysis, each cell was reduced by random selection to five subjects. For statistical analysis, then, N = 160.

Table XXII gives the IQ scores, and the grade level attained in reading for Grade III pupils categorized according to age at entrance, sex, socio-economic status, and kindergarten experience. Table XXIII gives comparable information for Grade VI pupils.

TABLE XXI

COMPOSITION OF THE SAMPLE WITH REPEATERS EXCLUDED GROUPED IN TERMS OF GRADE, SEX, AGE AT ENTRANCE, SOCIO-ECONOMIC STATUS, AND KINDERGARTEN EXPERIENCE

	Kindergarten		Non-kindergarten	
	Early	Late	Early	Late
Grade III				
Girls				
High SES	19	19	5	5
Low SES	20	20	23	28
Boys				
High SES	17	16	12	8
Low SES	14	23	26	32
Grade VI				
Girls				
High SES	13	12	8	5
Low SES	16	12	20	22
Boys				
High SES	6	6	5	6
Low SES	9	9	26	24

TABLE XXII

IQ SCORES AND GRADE LEVEL ATTAINED IN READING FOR GRADE III PUPILS GROUPED ACCORDING TO AGE AT ENTRANCE, SEX, KINDERGARTEN EXPERIENCE, AND SOCIO-ECONOMIC STATUS

	Early Entrants		Late Entrants	
	IQ*	Grade level in Reading*	IQ*	Grade level in Reading*
Kindergarten				
Girls				
High SES	109.4	5.2	106.6	5.8
Low Ses	109.0	4.2	109.0	5.5
Boys				
High SES	109.0	5.0	106.0	5.2
Low SES	107.8	4.4	107.4	5.2
Non-kindergarten				
Girls				
High SES	91.8	4.1	104.8	4.4
Low SES	108.2	4.8	103.6	5.1
Boys				
High SES	107.0	4.6	100.4	5.1
Low SES	102.2	4.7	105.4	4.7

*Mean Scores

TABLE XXIII

IQ SCORES AND GRADE LEVEL ATTAINED IN READING FOR GRADE VI PUPILS GROUPED ACCORDING TO AGE AT ENTRANCE, SEX, KINDERGARTEN EXPERIENCE, AND SOCIO-ECONOMIC STATUS

	Early Entrants		Late Entrants	
	IQ*	Grade level in Reading*	IQ*	Grade level in Reading*
Kindergarten				
Girls				
High SES	109.4	8.4	110.8	8.5
Low SES	108.4	7.7	110.0	7.9
Boys				
High SES	110.8	8.2	110.5	8.3
Low SES	110.2	7.1	111.0	7.9
Non-kindergarten				
Girls				
High SES	114.8	7.0	108.8	7.3
Low SES	110.6	6.6	109.2	8.2
Boys				
High SES	113.4	8.3	115.6	8.4
Low SES	110.0	7.2	111.8	7.9

*Mean Scores

II. RESULTS OF STATISTICAL ANALYSIS

The research hypotheses were tested by analysis of covariance. This statistical technique enables the researcher to control for one or more variables, while sorting out the effects of the factors under investigation. Since the groups were not matched on intelligence, it was decided to control for this variable. This involved adjusting the mean achievement score to what it would have been had the children been matched on mental ability. A test for significance, the F test, was then applied to determine whether the mean adjusted differences were sufficiently large to have arisen from causes other than chance. The advantage of using this type of analysis is that the significance of the interaction of all the factors involved can be tested.

Table XXIV shows the adjusted sum of squares and the F ratio for each of the variables and for the interaction of these variables. Only three of the differences were found to be significant, those on age at entrance, socio-economic status, and, as was to be expected, grade. None of the interactions between the various factors were significant. This would lead one to conclude that any significant differences found on any one factor are due, primarily, to that factor.

TABLE XXIV

ADJUSTED SUM OF SQUARES AND F RATIOS FOR EACH OF THE VARIABLES AND FOR THE INTERACTION OF THESE VARIABLES

	SS'	df	MS	F	
A	0.4	1		<1	N.S.
B	894.5	1		4.85	p. .05
C	1822.2	1		9.88	p. .01
D	326.8	1		1.77	N.S.
E	39206.5	1		212.48	p. .01
AB	81.8	1		<1	N.S.
AC	24.3	1		<1	N.S.
AD	595.7	1		3.23	N.S.
AE	121.2	1		<1	N.S.
BC	165.3	1		<1	N.S.
BD	322.0	1		1.80	N.S.
BE	0.7	1		<1	N.S.
CD	73.0	1		<1	N.S.
CE	78.0	1		<1	N.S.
DE	226.5	1		1.23	N.S.
ABC	156.4	1		<1	N.S.
ABD	253.8	1		1.38	N.S.
ABE	237.6	1		1.29	N.S.

TABLE XXIV (continued)

ACD	6.1	1		<1	N.S.
ACE	3.1	1		<1	N.S.
ADE	234.0	1		1.27	N.S.
BCD	14.2	1		<1	N.S.
BCE	33.4	1		<1	N.S.
BDE	6.7	1		<1	N.S.
CDE	477.2	1		2.59	N.S.
ABCD	272.1	1		1.47	N.S.
ABCE	341.8	1		1.85	N.S.
BCDE	109.0	1		<1	N.S.
ABDE	0.6	1		<1	N.S.
ACDE	601.4	1		3.26	N.S.
ABCDE	202.4	1		1.10	N.S.
error	23434.3	127	184.52		
TOTAL		158			

b = 1.136

Key to Variables - A Sex

B Socio-Economic Status

C Age of Entrance

D Kindergarten Experience

E Grade

Hypothesis Number One.

The major hypothesis of the study was that late entrants are superior to early entrants in overall reading achievement. An F ratio of 9.88, significant beyond the .01 level of confidence, permits the acceptance of this hypothesis. Since the interactions between age and kindergarten, age and sex, and age and socio-economic status were not significant, it may be assumed that this difference in reading achievement between early and late entrants is due to the difference in age at time of entrance.

Hypothesis Number Two.

It was hypothesized that girls surpass boys in overall reading achievement. The F ratio shows that sex was not a significant factor in the reading achievement of the pupils involved in this study. The hypothesis is, therefore, rejected.

Hypothesis Number Three.

It was hypothesized that children with kindergarten experience are superior in reading achievement to children who have not had such experience. An F ratio of 1.77, too small to be significant, does not permit the acceptance of this hypothesis.

Hypothesis Number Four.

It was also hypothesized that early entrants with kindergarten experience surpass early entrants who have not

had such experience. Rejection of the hypothesis that kindergarten children surpass non-kindergarten children leads to the rejection of this hypothesis also. The F ratio for the interaction of age and kindergarten was not large enough to be significant.

Hypothesis Number Five.

It was hypothesized that children from high socio-economic backgrounds are superior to children from low socio-economic background in overall reading achievement. This hypothesis is accepted. The F ratio of 4.85 is significant beyond the .05 level of confidence.

Hypothesis Number Six.

This hypothesis states that there is a greater difference in reading achievement between the kindergarten and non-kindergarten pupil in the low socio-economic bracket than between the kindergarten and non-kindergarten pupil in the high socio-economic bracket. As kindergarten is shown to have had no significant effect on the reading achievement of the groups, this hypothesis must be rejected.

III. DISCUSSION OF THE FINDINGS

The major purpose of the study was to ascertain whether the age difference between the oldest and youngest of the Grade I entrants is a significant factor in the later reading

achievement of the groups. Analysis of the data, involving sorting the effects of the various factors--age, sex, kindergarten experience, and socio-economic status--and controlling for intelligence, indicates that the older child does have the advantage over the younger child in the present organization in the Province of Newfoundland. It may be argued that the differences in reading achievement between early and late entrants could be due to differences in mental age. This is quite possible. However, the fact remains that under present admission policies, chronological age is the sole criterion on which admission to school is based. Hence, younger children, in some cases practically a year younger than their older classmates, are admitted to first grade and are expected to compete with the older children all the way through school. An incoming Grade I class usually has an age range from 5 years 8 months to 6 years 7 months.

The relationship between the socio-economic background of pupils and their achievement in reading was another factor investigated in this study. The fact that, in general, the lower intelligence groups and the non-kindergarten groups came from low socio-economic backgrounds, has already been noted. Analysis showed, however, that even when the children were equated on intelligence, those from high socio-economic backgrounds were far superior in reading achievement to those

from low socio-economic backgrounds. None of the interactions of the socio-economic factor with the other variables were found to be significant. This would indicate that the differences found between the high and low socio-economic levels were due to the influence of this factor.

Another purpose of the study was to investigate the relationship between kindergarten experience and later reading achievement. Although the sample as a whole yielded higher scores for the kindergarten group, it should be noted that this group also scored higher on intelligence and that, in general, they came from higher socio-economic backgrounds than the non-kindergarten group. This may account for the fact that the mean difference in reading achievement between kindergarten and non-kindergarten groups was fairly large before the groups were equated on intelligence. It is interesting to note that for the groups used for statistical analysis, the IQ ranged from 100.4 to 115.6, with one exception--a 91.8 for a non-kindergarten group in Grade III. Lower IQ groups were not, then, represented in the statistical analysis, and no statements can be made for these groups. This may account, in part, for the non-significance of the kindergarten factor, since, presumably, children of higher intelligence may be expected to adjust quickly to a learning situation regardless of whether or not they have had kindergarten experience.

A related hypothesis, also rejected, was that early entrants with kindergarten experience are superior in reading achievement to early entrants without such experience. The rationale for this hypothesis was that the experience of the kindergarten year would have given the kindergarten early entrant an advantage over the non-kindergarten early entrant. Analysis shows, however that age at entrance is a more important factor than kindergarten in relation to reading achievement.

The hypothesis that there is a greater difference between the kindergarten and non-kindergarten pupil in the low socio-economic bracket than between the kindergarten and non-kindergarten pupil in the high socio-economic bracket was also rejected. Here, the rationale was that kindergarten experience would have a greater effect on the reading achievement of children from low socio-economic backgrounds than on the reading achievement of children from high socio-economic backgrounds. Presumably, children from high socio-economic backgrounds would have a good chance of succeeding in school whether or not they had attended kindergarten. Since, however, the interaction between the kindergarten and socio-economic factors was not significant, this hypothesis could not be accepted.

These hypotheses were made on the basis of the findings of previous studies. It should be noted, however, that many earlier studies investigating reading achievement involved a limited number of variables and that, in many cases, the interactions between the variables were not analysed. While it is clearly impossible to include, in any one study, all the factors that may be related to reading achievement, it is well to match or control as many variables as possible.

CHAPTER VI

SUMMARY OF FINDINGS

The study sought to investigate some of the factors which were thought to be related to the reading achievement of school pupils. The major emphasis of the study was the relationship between age at entrance to Grade I and reading achievement in Grades III and VI. Other factors assessed for their relationships to reading achievement were kindergarten experience, sex, and the socio-economic status of the family.

The subjects were 593 children in Grades III and VI in selected elementary schools in the city of St. John's. A number of children who had entered Grade I at the same time as the Grade III students and Grade VI students in the sample but who had repeated a grade were included in the testing. This was done in order to ascertain which of the factors being investigated were related to retardation in the grades.

The pupils were divided into groups according to age at entrance, kindergarten experience, sex, and the socio-economic status of the family. The Lorge-Thorndike Intelligence Test and the Revised Nelson Reading Test were administered to all the pupils in the sample. Although the data for the sample as a whole were not treated statistically, a descriptive analysis was given in Chapter IV. The statistical analysis, involving analysis of covariance, was performed on the data

for a stratified random sample of 160 subjects. This analysis was described in Chapter V.

I. MAJOR FINDINGS

Chronological age at time of entrance to Grade I was found to be a significant factor in influencing later reading achievement. Not only were the late entrants significantly superior to the early entrants in achievement, but there were nearly twice as many repeaters among the early entrants. Had these been included in the statistical analysis, the difference in the reading achievement of early and late entrants would have been even greater.

Socio-economic status, also, was found to be an important factor related to reading achievement, the pupils from high socio-economic backgrounds scoring significantly higher in reading than pupils from low socio-economic backgrounds. Again, retardation in the grades was linked to socio-economic status. Of the 90 repeaters tested, 79 came from low socio-economic backgrounds.

Sex was not found to be a significant factor in the reading achievement of pupils involved in this study. Although the sample as a whole yielded a slightly higher reading score for girls, the difference was not found to be statistically significant. Of the 90 repeaters, 49 were boys and 41 were girls.

The kindergarten factor was not significantly related to reading achievement. In general, the non-kindergarten groups had the lowest intelligence level, came from the lower socio-economic brackets, and had the greatest number of repeaters. The average IQ score for the whole sample of eight-year-olds was 101 for kindergarten pupils and 92.6 for non-kindergarten pupils. For the eleven-year-olds the average score was 110.3 for the kindergarten pupils compared with 103.2 for the non-kindergarten pupils. Of the 325 non-kindergarten pupils, 264 were from low socio-economic backgrounds. The non-kindergarten group had 70 repeaters compared with 20 for the kindergarten group.

II. IMPLICATIONS

Two major inferences arise from the findings of this study. First, there is evidence to support the practice of establishing a minimum age at which children can be admitted to Grade I. While some children admitted before the age of six are, undoubtedly, making favourable school progress, at least 50 percent of the early entrants tested were reading below grade level. It is recommended that, unless adequate testing services can be made available at entrance, six be made the minimum age for admission to Grade I.

A second major inference arising from this study is that there is a definite need for special pre-school education for children from lower socio-economic groups. While early schooling is probably desirable for all children, it may be considered a necessity for the children from these backgrounds. The vast majority of children from low socio-economic backgrounds included in this study had not been to kindergarten. It is necessary, then, that not only should kindergarten be made available to this class of children, but that arrangements be made for supplementary learning experiences either preceding, or in conjunction with, the kindergarten program. It is recommended that studies be initiated into types of programs likely to be effective and that pilot projects be undertaken.

III. RECOMMENDATIONS FOR FURTHER STUDY

In view of the fact that, contrary to most findings, the kindergarten factor was not found to be significantly related to reading achievement, it is recommended that studies be initiated into the types of kindergarten programs presently available to students in Newfoundland. While it may not be advisable to establish a set program for kindergarten, it is necessary that the program be a planned one.

It is further recommended that the influence of age at entrance, and of kindergarten experience, be studied in relation to areas other than reading.

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