

RELATION OF FIRST GRADE ENTRANCE AGE
TO SUBSEQUENT ACADEMIC ACHIEVEMENT

BY
RAYMOND KEITH THOMAS

Submitted in partial fulfillment of the requirements
for the Master of Education degree
Montana State College
August 1963

TABLE OF CONTENTS

Chapter	Page
I. INTRODUCTION	1
Problem	3
Limitations	4
Procedures	4
II. REVIEW OF LITERATURE	5
Effects of Entrance Age on Achievement	5
Mental Maturity Related to Entrance and Achievement	9
Sex Difference and School Achievement	11
III. RELATIONSHIP OF SCHOOL AGE ENTRANCE AND ACHIEVEMENT	14
Comparison of Academic Achievement and Entrance Age Groups	15
Sex Differences in Achievement Compared with Chronological Entrance Age	19
IV. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS	27
Conclusions	29
Recommendations	29
BIBLIOGRAPHY	30
APPENDIX	33

LIST OF FIGURES

Figure	Page
1. Combined Averages of Fourth, Eighth, and Twelfth Grade Ranks for 85 Students Grouped by Entrance Age	17
2. Comparison of Chronological Entrance Age with Achievement Rank at the Fourth Grade Level	18
3. Comparison of Chronological Entrance Age with Achievement Rank at the Eighth Grade Level. . .	20
4. Comparison of Chronological Entrance Age with Achievement Rank at the Twelfth Grade Level . .	21
5. Comparison of Girls' Achievement Rank and Boys' Achievement Rank "for the Fourth, Eighth, and Twelfth Grades Combined" with Chronological Entrance Age	23

CHAPTER I

INTRODUCTION

Many parents and educators are concerned with the age at which children should enter the first grade. They have a right to be anxious, since there are conflicting views among authorities concerning this problem. Some researchers have noted that a mental age of six years and three months (6.3)¹ was necessary to learn to read, while another investigator had indicated that there was no mental age which could be set down as a minimum or optimum for learning to read between the mental ages of 5.0 and 7.0.

To prove that a mental age of 6.3 was needed for a child to succeed in reading, Morphett and Washburne² made a study of the reading program in the Winnetka schools. They reported that a small percentage of children with a mental age of less than 6.0 were able to progress satisfactorily, but in the group having a mental age of 6.0 to 6.6 there was a sharp rise in the percentage achieving satisfactory progress. They further suggested that

¹The whole number denotes years of age and the decimal denotes months. This system is used throughout this paper.

²Morphett, Mabel V., and Washburne, Carleton, "When Should Children Begin to Read?" Elementary School Journal 31: 496-503, March, 1931.

children entering first grade with a low mental age became discouraged in their attempts to read.

Gates³ contradicted Morphett's and Washburne's idea of an optimum age for entering first grade. His study indicated that children admitted who may not be fully ready to read may otherwise profit from school experience. Gates further stated that a mental age of 5.0 was sufficient for learning to read if other influences were satisfactory.

If parents and educators were to review the results of these two studies, they would be undecided on which authority to base their decisions on entrance age.

Prevailing practice with respect to age of school entrance varies greatly. In some systems of the country a child must be 6.0 by August 31 in order to enter school. In other places a child's sixth birthday may be as late as February 1. Some schools admit younger children on the basis of tests. No exceptions to entrance age policies are allowed in others. The statutes of Nebraska require that a child be 6.0 by October 15, or be admitted by a test of readiness given by a psychologist. The criteria for the test were set up by the State Department of Education. Montana Law states that a child ~~may~~ begin

³Gates, Arthur I., and others, Educational Psychology, Macmillan and Co., New York, 1950, 3rd ed., p. 294.

school at age 6.0 and must do so at age 7.0. Some local policies permit students to enroll at age 5.0 if their sixth birthday was reached by a set cut-off date. These dates vary from school to school within the state.

To summarize prevailing entrance age practices one could say that communities have certain entrance dates designated while others have chosen entirely different dates, and still others have made exceptions in their entrance age policies. School authorities must have based their opinions on their experiences, and obviously they have not had the same experiences. This is clearly evidenced by the fact that age of entrance was set long before research on entrance age was conducted. The school authorities agreed that readiness was an important factor for success in school and since readiness is related to achievement it would seem that the relationship of achievement to age of entrance should be investigated.

Problem

The relationship between the age a child enters first grade and his subsequent academic achievement was the main objective of this investigation. Since there is no doubt that academic achievement is of prime importance to a student, it was believed that there should be evidence supported by research on which the most advantageous entrance age could be based.

Limitations

This study was limited to one entering class in the Livingston school systems. Those students who left the districts or transferred into the systems were necessarily eliminated from the study. Achievement tests were used to rank the students in the fourth and eighth grades. Twelfth grade rank was determined by grade point average of four years of high school work.

Procedures

Two procedures were used in this investigation. First, published literature was reviewed to determine what studies had been conducted and what had been revealed on age of entrance and its relation to achievement. Second, the records of 85 students of the 1960 graduating class of Park County High School, Livingston, Montana, were examined to find out if there was a relationship between entrance age and achievement. Data were taken from the office files of the elementary superintendent and the high school principal of the Livingston school systems. The scholastic progress of the group selected was checked at the fourth, eighth, and twelfth grade levels. Data were then compiled and the results were used to show relationship between entrance age and achievement.

The results of a review of literature on chronological age and mental age and their relationship to entrance age and achievement are presented in Chapter 2.

CHAPTER II

REVIEW OF LITERATURE

Literature was examined to determine current practice in regard to ages set for school entrance and to summarize studies concerned with age of entrance and the effect it has on scholastic achievement. Studies on mental maturity, reading readiness, and sex differences were also examined for their relationship to entrance age and scholastic achievement.

Effects of Entrance Age on Achievement

Chronological age differences tend to exaggerate already existing natural differences of children entering the first grade, and motivated some researchers to determine what the entrance age practices were in the United States and what effects entrance age had on academic achievement.

Most of the school systems in the United States set an arbitrary minimum age for entering first grade. A study¹ of 544 urban school districts revealed the lowest minimum entrance age was 5.0 and the highest minimum 6.5. Seventy-four percent of the districts set a minimum age for first grade entrance between 5.7 and 5.10. Only

¹National Education Association, Minimum Admission Age for Kindergarten and Grade I, Urban School Districts, 1953.54 NEA Research Division, National Education Association, p. 3, 1954.

slightly over two percent indicated no set age requirement. There were some school systems which reported that children were admitted below the minimum entrance age if careful screening indicated the children were ready for first-grade work.

Children admitted to the first grade in Brookline, Massachusetts, who were younger than 5.9 by October 1 achieved a statistically significant better average scholastically than did their older classmates. The customary entrance age policy in Brookline stated that children must be 5.9 by October 1, but children who are as young as 5.3 could be admitted if test results revealed a mental age of 6.2 or more. These early admissions were further based upon emotional and social maturity and upon physical development. In a follow-up of the young children made by Cone² the younger group reflected academic superiority over older children and indicated fewer referrals to school officials for emotional, social, and other personality adjustments.

An overwhelming majority of the children admitted to first grade in Pittsburgh who were younger than 5.7 by September 1 were making satisfactory school adjustments in all areas of school life by the second semester of the third grade. The minimum entrance age in Pittsburgh,

²Cone, Herbert R., "Brookline Admits Them Early," Nation's Schools 55: 46-47, March, 1955.

Pennsylvania, was "5.7 by September 1". Children as young as 5.0, however, were admitted upon the recommendation of a psychologist in an effort to find a satisfactory basis for early admissions. The youngest child of this group was almost 5.4 and the oldest was just one day short of being old enough for admission without special examination.

Twenty-seven elementary schools representing all parts of the city admitted the members of the group. Birch,³ who reported the results of the study, indicated that 116 follow-up comments from teachers revealed the children made satisfactory school adjustments in academic, social, emotional, and physical areas.

In another study of mentally advanced children, Forester⁴ reported that the children classified as very old meet with more success in school than children classified as very young. A follow-up through high school of 500 children who began kindergarten in 1926 revealed that children 5.6 and older with high I.Q.'s excelled generally throughout their school careers. Those with high I.Q.'s, but below 4.6 in age met with more than usual difficulties from the junior high level on. Teachers reported the younger students demonstrated less physical maturity and

³Birch, Jack W., "Early School Admission for Mentally Advanced Children," Exceptional Children 21: 84-87, December, 1954.

⁴Forester, John J., "At What Age Should a Child Start School?" School Executive 74: 80-81, March, 1955.

greater emotional instability.

It was also found that younger children had greater difficulty in achieving grade levels in basic skills in a study by King.⁵ One hundred and four first grade children in Oak Ridge, Tennessee, were selected and divided into two groups, those under 6.0 and those who were 6.0 and older. In addition to lower achievement, the younger group had poorer attendance, more retentions, and had more trouble adjusting socially. Essentially the same was found to be true by Hamalainen⁶ in a study of underage children of Nassau County, New York, and by Carter⁷ in a comparison of achievement of 25 children enrolled under 6.0 to 25 children enrolled over 6.0. Both Hamalainen and Carter also noted that younger children had more emotional problems.

The older group of the 1954-55 first grade classes of Missoula, Montana, had higher median scores in achievement than did the younger group. The class was divided according to the child's chronological age on September 1.

⁵King, Inez B., "Effect of Entrance Age into Grade I Upon Achievement in Elementary School," Elementary School Journal, 53: 331-336, February, 1955.

⁶Hamalainen, Arthur E., "Kindergarten-Primary Entrance Age in Relation to Later School Adjustment," Elementary School Journal, 52: 406-411, 1952.

⁷Carter, Lowell B., "Effect of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools," Journal of Educational Research, 50: 91-103, October, 1956.

Shields⁸ reported the maximum medial difference between the groups was 0.2 grade levels.

Authors of these studies agreed that a child must be ready for school if he is to achieve success in school. Authorities were not, however, unanimous in their opinions on the age at which a child is ready for first grade work. Some authors do agree that mental age is more predictive of success than chronological age.

Mental Maturity Related to Entrance and Achievement

Because mental age seems more predictive of success in school than chronological age, several researchers have examined the relationship between entrance age policies and mental age.

After examining entrance practices, Hildreth⁹ advocated a mental age of 5.9 as a minimal. In her opinion, exceptionally able children, such as a five-year-old with a mental age of 6.0, might successfully cope with Grade I work, but a mental age of 6.2 is more likely to insure appropriate academic progress. Hobson¹⁰ also interested

⁸Shields, Reed L., "A Study of Some Factors That are Related to Success and Failure in the First Grade Program of School District I, Missoula, Montana," Unpublished Master's Thesis, Montana State University, Missoula, 1956.

⁹Hildreth, Gertrude H., "Age Standards for First Grade Entrance," *Childhood Education* 23: 22-27, September, 1946.

¹⁰Hobson, James R., "Mental Age as a Workable Criterion for School Admission," Elementary School Journal 48: 312-321, February, 1948.

himself in mental age as a criterion for school admission. A ten-year study he made led him to the inference that children who were up to six months below the minimum chronological age limit of 6.2 for Grade I would be likely to succeed if their mental age was 6.2

Because of the widespread interest in mental age as a criterion for admission to kindergarten or to Grade I, a 48-state survey was made by a professional journal¹¹ to determine administrators' attitudes on mental age as a criterion for admission. Over half of the respondents were sympathetic to the idea of basing entrance upon a child's mental age plus physical and emotional maturity data. Many superintendents, however, mentioned such problems as the high cost of a psychological testing program, the lack of qualified personnel to administer tests, the problem of the validity of intelligence tests for young children, and emotional attitudes of parents toward normal variations in mental age.

Researchers have shown that mental age may also be used as an indication of readiness for reading. Frequently the findings of Morphett and Washburne¹² have been cited as indicating that a mental age of 6.0 to 6.6 was more conducive to satisfactory reading progress. This study was not

¹¹Nation's Schools, "Should Beginning Pupils be Admitted on Mental Age," Nation's Schools 56: 6, August, 1955.

¹²Morphett and Washburne, op. cit., p. 449.

the first or the last to advocate a minimum mental age for learning to read. In a study of the causes of non-promotion in the first grade schools in Los Angeles and San Diego, McLaughlin¹³ found the chief factor to be insufficient mental maturity for learning to read. Raybold¹⁴ also found that mental immaturity was the chief cause of non-promotion in the first grade. Pupils entering with a mental age of 6.4 were almost always promoted. Further study of the effect of mental age on achievement was reported by Thomson.¹⁵ The study revealed that children with mental ages of at least 6.0 before reading was begun liked reading better and made faster progress than younger children.

As authors investigated chronological age and mental age in relation to entrance age and achievement, some noted that boys have a more difficult time attaining success in school because of maturity differences.

Sex Differences and School Achievement

There was literature available which revealed that the academic work of boys and girls differs because boys

¹³McLaughlin, Katherine L., First Grade Readiness and Retardation, Los Angeles: The Research Committee of the California Kindergarten-Primary Association, 1928, 36 pp.

¹⁴Raybold, Emma, "Reading Readiness in Children Entering First Grade," Third Yearbook of Psychology and Educational Research Division, School Publication No. 185, Los Angeles School District, 1929, pp. 98-101.

¹⁵Thomson, Jennie Lloyd, "Big Gains from Postponed Reading," Journal of Education 142: 445-446, October, 1934.

generally mature mentally and physically slower than girls.

After studying students in the Omaha school system, Pauly¹⁶ concluded that boys were likely to develop physically at a slower rate than girls and that girls made better scores in reading and arithmetic tests. Sixty-eight and one half percent of the slow readers were boys. He suggests having different legal entrance ages for boys and girls. King¹⁷ also noted differences which suggested that young boys are more likely to have problems during early years in school. These problems often affect achievement. Although in a study of the Missoula first graders Shields¹⁸ found that the girls' median of achievement on Stanford Achievement Tests was slightly higher than the boys' median, the difference was not found significant.

From the studies reviewed in this chapter it may be concluded that no chronological age has been decided on as an essential minimum for entrance into the first grade. To complicate the setting of a minimum entrance age, boys generally mature mentally and physically slower than girls. A mental age, however, of at least 6.0 when starting school was most often cited as necessary for first grade work.

¹⁶Pauly, Frank R., "Sex Differences and Legal School Age," Journal of Educational Research 45: 1-9, September, 1951.

¹⁷King, op. cit., p. 334.

¹⁸Shields, op. cit., p. 21.

The lack of conclusive evidence for setting a minimum entrance age led this writer to investigate the relationship of age of entrance to achievement. The examination of chronological entrance age groups and their subsequent achievement is presented in Chapter 3.

CHAPTER III

RELATIONSHIP OF SCHOOL AGE ENTRANCE AND ACHIEVEMENT

A review of literature revealed that authorities have not decided on an essential minimum chronological age for entrance into the first grade. In order to provide a basis for setting a minimum entrance age that would be most advantageous scholastically, the relationship between the age a child enters first grade and his subsequent academic achievement was examined by this writer.

The 1948 first grade class of Livingston, Montana, was the group chosen for this investigation. The school records of this group were examined and the 85 students who had entered first grade and completed all twelve years in the Livingston school systems were selected for investigation. The fourth, eighth, and twelfth grades were arbitrarily chosen as years for comparing achievement with entrance age.

Information collected from the office files of the elementary superintendent and the high school principal was secured concerning: (1) names; (2) chronological age as of September 1, the year of entrance into first grade; (3) median scores on Stanford Achievement Tests¹ administered at

¹Stanford Achievement Tests, New York, World Book Co., Elementary (grades 3.0-4.0), Advanced (grades 7-9).

the fourth and eighth grade levels; and (4) grade point averages of four years of high school work.

Comparisons were then made between the following: (1) entrance age and the mean of the fourth, eighth, and twelfth grade achievement ranks combined; (2) entrance age and achievement rank in the fourth grade; (3) entrance age and achievement rank in the eighth grade; and (4) entrance age and twelfth year achievement rank. The group was then separated by sexes and a comparison of entrance age with achievement rank² was made.

Comparison of Academic Achievement and Entrance Age Groups

A comparison of school age entrance with the combined means of the fourth, eighth, and twelfth grade ranks for 85 students indicated older students on the average did better scholastically than the younger students. The students' achievement ranks in the fourth and eighth grades were found by using median scores of the Stanford Achievement Tests and listing them from the highest score to the lowest score. A rank from one to 85 was assigned each of the scores from highest to lowest. The twelfth grade ranks were determined by grade point averages of four years of high school work.

The students were separated into two groups, 5.8

²Hereafter in this study achievement rank will be referred to as rank.

through 6.3 and 6.3 through 6.10. Age 6.3 was included in both groups for balance making eight months in each group.

The rank of the younger group ranged from 23.9 to 57.8 with a mean rank of 44.0. The mean rank of the older group was 36.2 and ranged from 20.7 to 52.6. The mean difference was 7.8 ranks. The older group was 5.0 ranks better than the mean of the total group. These relationships of entrance age and rank are shown in Figure 1. The mean ranks of the grade levels at which achievement was checked were scaled on the vertical axis and age groups were plotted on the horizontal axis. Each of the two groups was represented by a bar. The horizontal broken line represents the mean of the total group.

In order to examine this comparison more closely, the achievement of the combined check points was broken down and comparisons at the fourth, eighth, and twelfth grade levels were made.

Students who were 6.3 and older at the time of entrance generally achieved better at the fourth grade level than students whose entrance age was younger than 6.3. Of the seven older age groups four performed better than the class mean rank of 38.8. Three of the seven younger age groups performed better than the mean. The best achievement by age was found at 6.10 and 6.3 and 6.7 followed. Age 5.9 revealed the poorest achievement. The range at the fourth grade level was 54.7 ranks. These comparisons are brought out in Figure 2.

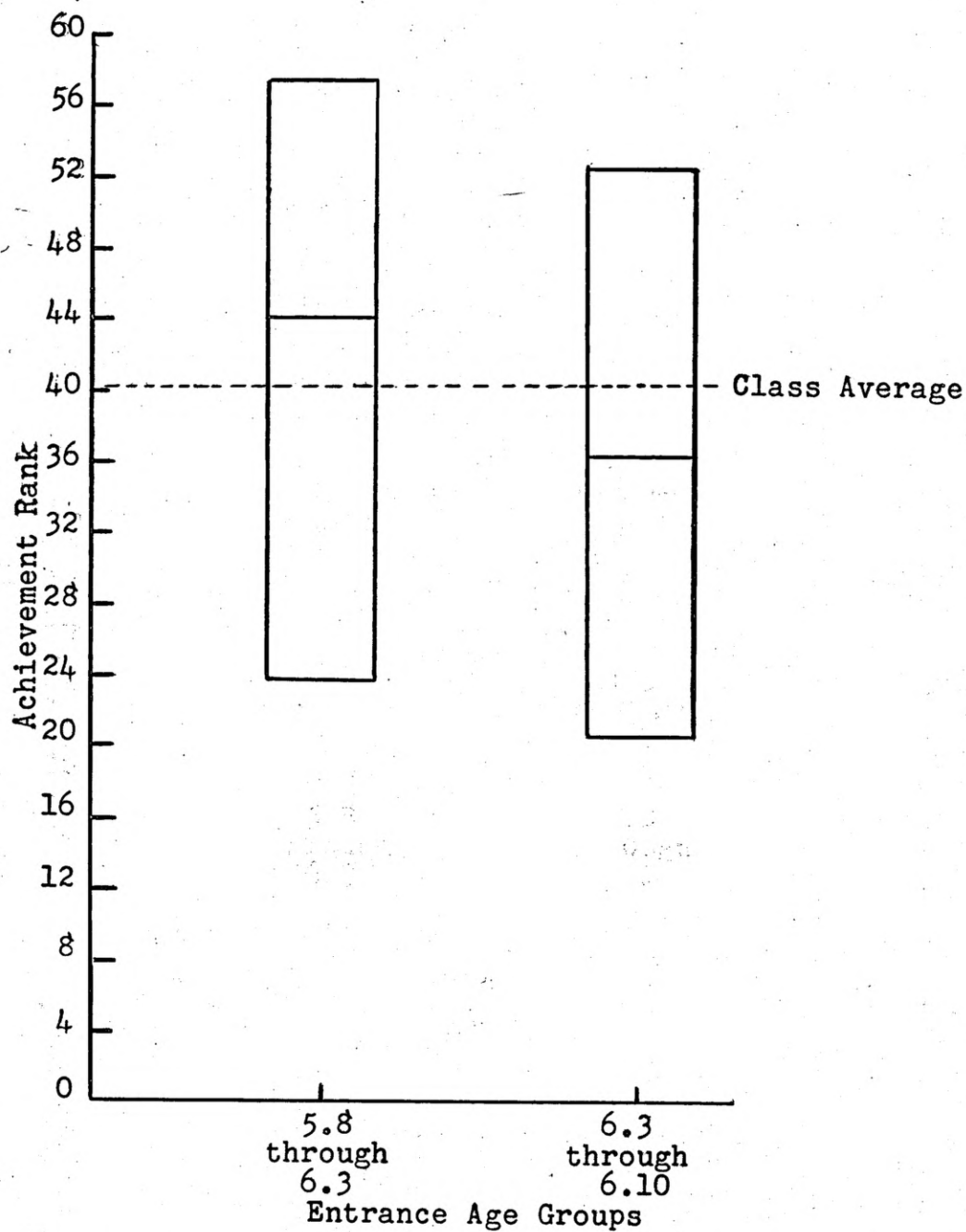


Figure 1. Combined Averages of Fourth, Eighth, and Twelfth Grade Achievement Ranks for 85 Students Grouped by Entrance Age

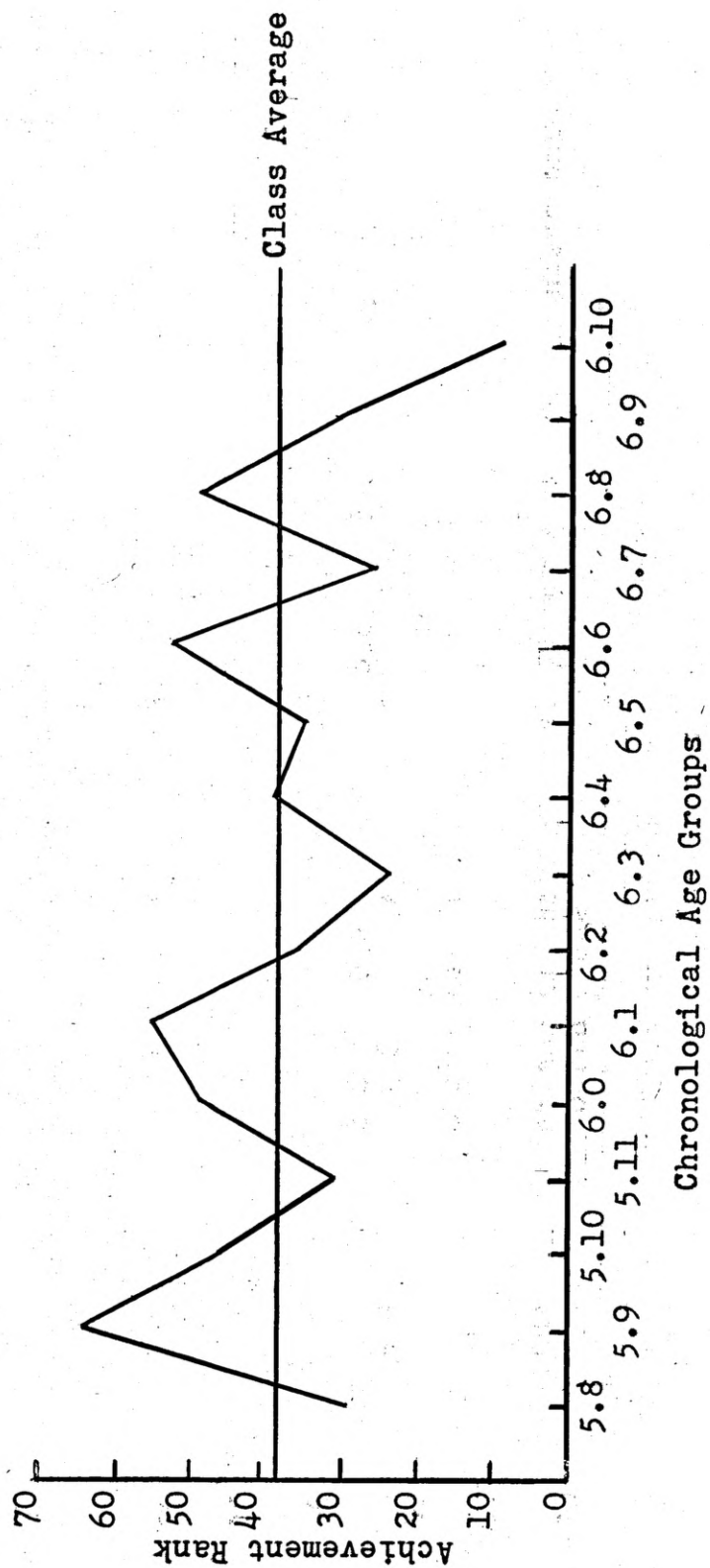


Figure 2. Comparison of Chronological Entrance Age with Achievement Rank at the Fourth Grade Level

A similar comparison at the eighth grade level also indicates that students whose entrance age was 6.3 and older were more successful scholastically than younger entrants. Of the seven older age groups five achieved better than the class mean achievement rank of 41.3 and only two of the younger seven age groups achieved better than the class average. Age 6.3 showed the best achievement and age 6.0 the poorest. The range at this level was 32.3 ranks. A graph to show these comparisons is presented in Figure 3.

At the twelfth grade level a comparison of the seven younger groups with the seven older groups again revealed that the older students did better scholastically. Of the seven older age groups four were above the class mean achievement rank of 43.5. Three age groups of the younger seven groups were above the class average. Age 6.3 again revealed the best achievement rank and 6.1 revealed the poorest achievement rank. The range at this level was 39.1. These comparisons are presented in Figure 4.

Sex Differences in Achievement Compared with Chronological Entrance Age

A review of literature on sex differences and achievement revealed that boys mature more slowly than girls and that boys generally have more difficulties attaining academic success in school. This led the writer to investigate the differences in academic achievement of the girls and boys in this study with relation to entrance age.

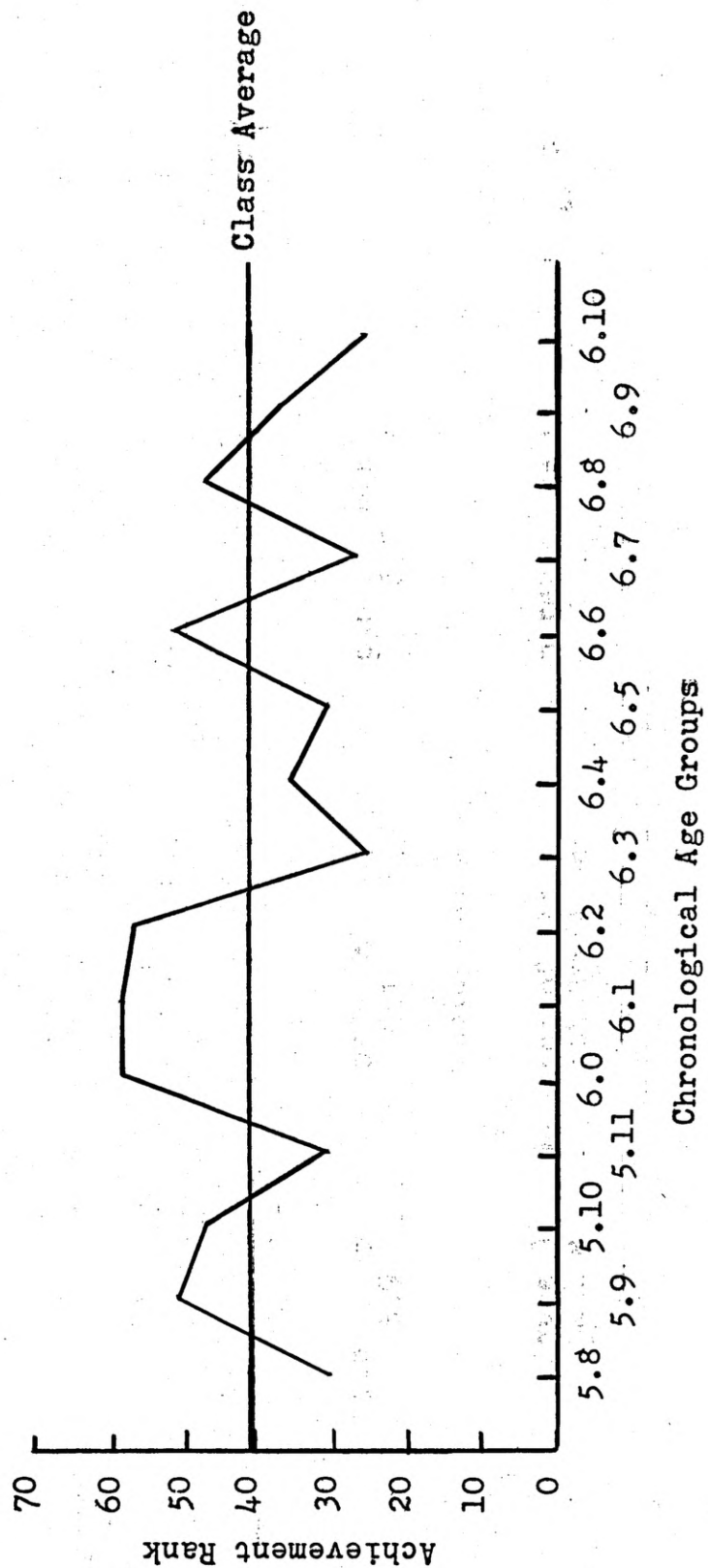


Figure 3. Comparison of Chronological Entrance Age with Achievement Rank at the Eighth Grade Level

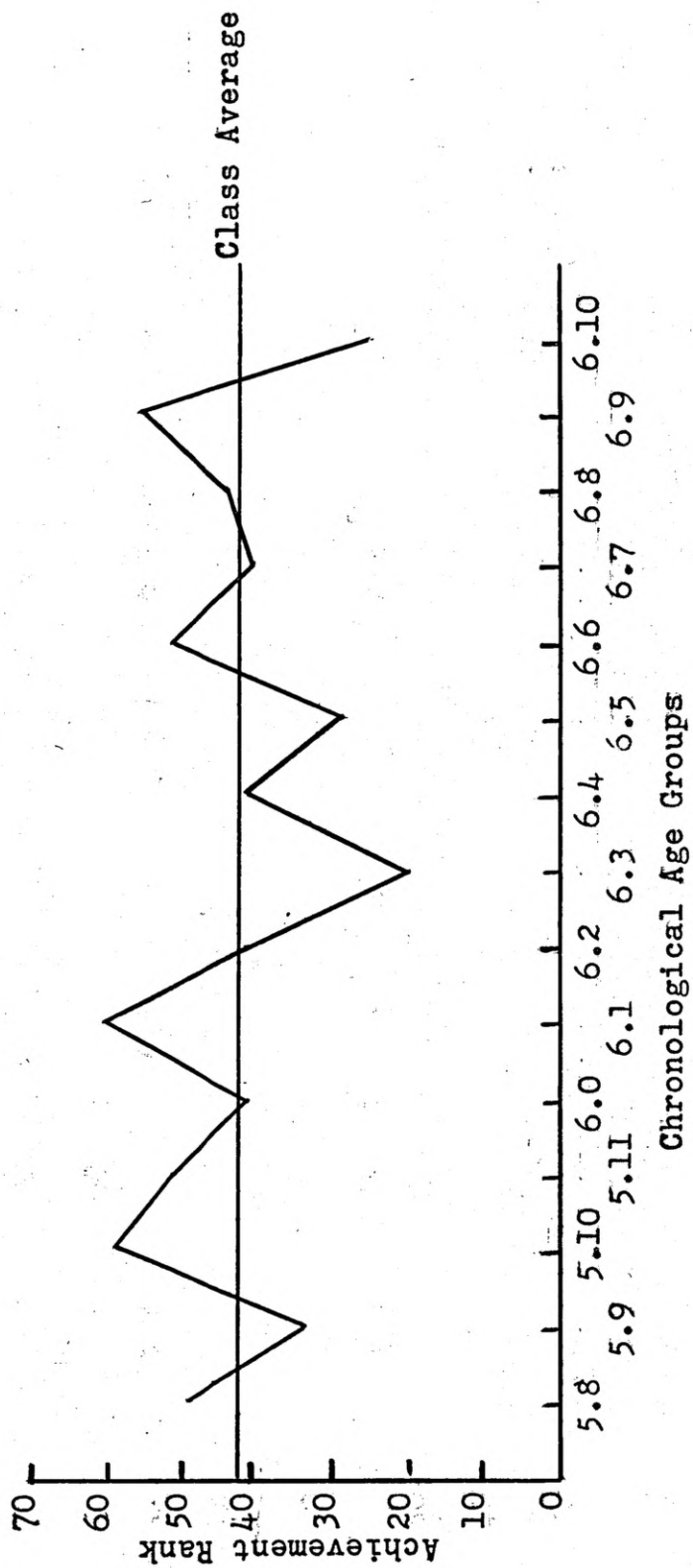


Figure 4. Comparison of Chronological Entrance Age with Achievement Rank at the Twelfth Grade Level

A comparison of the girls' average of the fourth, eighth, and twelfth grade average ranks with the boys' average ranks indicated that girls did better scholastically than boys. Also, better academic achievement was shown by the older age groups of both girls and boys.

Of the fourteen girls' age groups eight achieved better than the class average of 41.2. Of the fifteen boys' age groups only four achieved better than the class average. There were no girls in the 6.9 age group.

The mean for the girls was 35.0 or 6.2 ranks better than the class average. The mean for the boys was 54.7 or 4.5 ranks less than the class average. The difference between the boys' average and girls' average was 10.7 ranks. These comparisons of girls' achievement with boys' achievement in relation to entrance age are presented in Figure 5.

The average ranks of the grade levels at which achievement was checked were scaled on the vertical axis and age groups were plotted on the horizontal axis. The girls were represented by a broken line and the boys by a solid line. The horizontal broken and solid lines represent the girls' and boys' means of the fourth, eighth, and twelfth grade averages respectively.

To examine this comparison in more detail the relationships at the fourth, eighth, and twelfth grade checkpoints were studied separately. At the fourth grade level both sexes revealed higher scholastic achievement in the

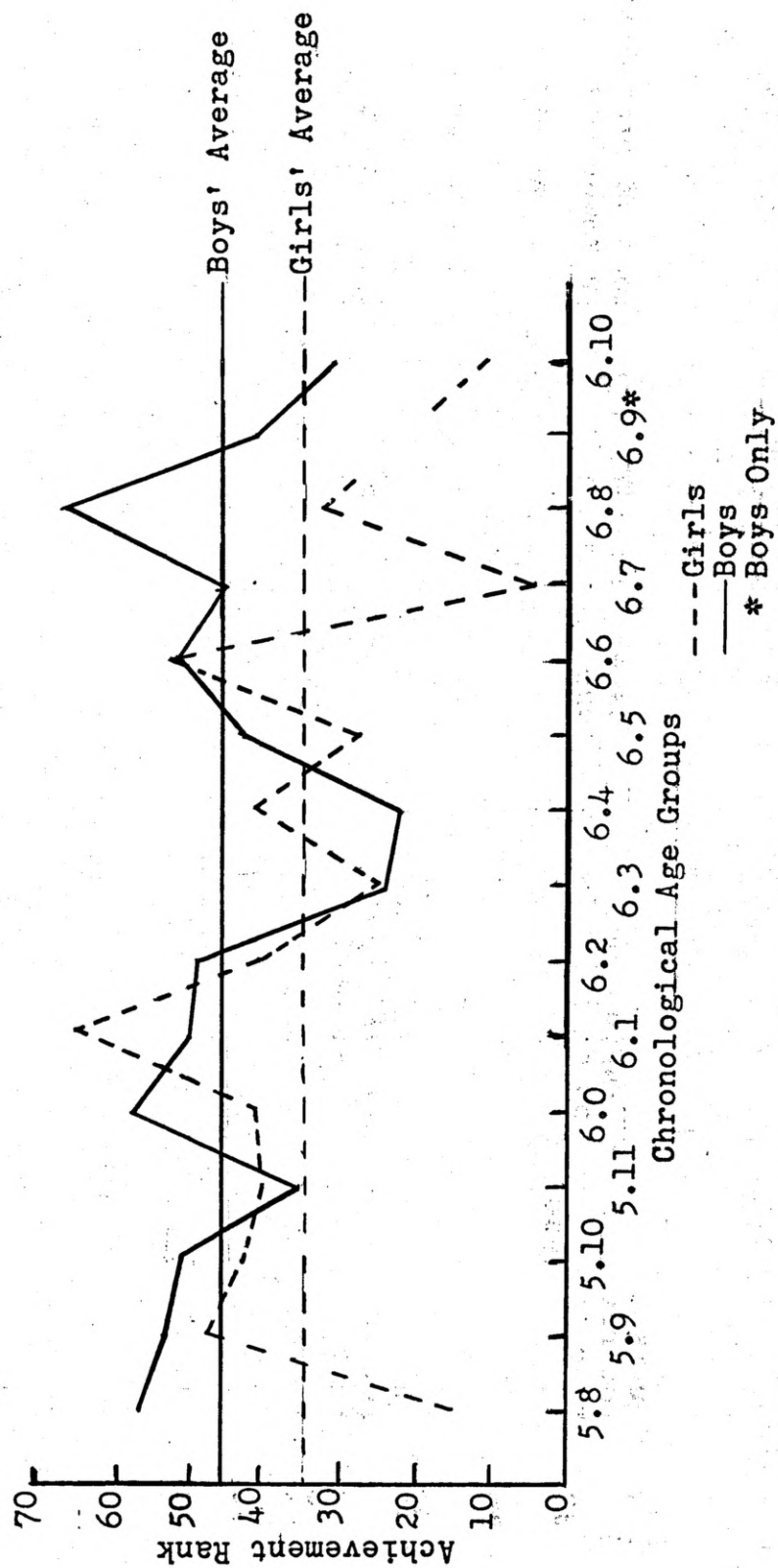


Figure 5. Comparison of Girls' Achievement Rank and Boys' Achievement Rank "for the Fourth, Eighth, and Twelfth Grades Combined" with Chronological Entrance Age

age groups older than 6.3 than in the younger age groups. Girls at this level were more successful scholastically than boys.

The best average rank of 1.0 for girls was at age 6.7. At age 6.1 the average rank dropped to 68.3. Four age groups of girls older than 6.3 attained better than the class average of 38.8 and three age groups younger than 6.3 attained better than the class average.

Age 6.10 for boys revealed the best average rank, 14.0. The poorest average rank, 70.0, occurred at age 6.8. Three age groups of boys older than 6.3 attained better than the class average of 38.8 and two age groups younger than 6.3 achieved better than the class average.

The girls average rank of 34.7 was 4.1 ranks above the class average. The boys average rank 41.3 was 2.5 ranks below the class average. The difference between the girls' and boys' average ranks at this level was 6.6.

Again at the eighth grade level both sexes revealed higher scholastic achievement in the age groups older than 6.3. Girls at this level were once again more successful scholastically than boys.

The best average rank for girls was at age 6.7 with an average rank of 1.0. At age 6.1 the average rank dropped to 68.3. Four age groups of girls older than 6.3 achieved better than the class average of 41.3 and three age groups younger than 6.3 achieved better than the class average.

Age 6.4 revealed the best rank for boys to be 15.5. The boys poorest rank, 67.0, occurred at age 6.8. Four age groups older than 6.3 achieved better than the class average of 41.3. Only one age group younger than 6.3 achieved better than the average.

The girls' average rank of 36.3 was 5.0 ranks above the class average. The boys average rank of 43.9 was 2.6 ranks below the class average. The difference between the girls' and boys' average rank at this level was 7.6.

A similar comparison at the twelfth grade level further substantiated the findings of the fourth and eighth grade levels. Older girls and boys showed better scholastic achievement than their younger classmates. At this level the girls' academic success was outstandingly better than the boys'.

Age 6.7 revealed the best average rank, 11.0, for girls. Age 6.1 revealed the poorest average rank, 64.7. Five age groups of the girls older than 6.3 achieved better than the class average of 43.5 and four age groups of girls younger than 6.3 performed better than the class average.

The best average rank of 25.3 for boys was found at age 6.3 and the poorest average rank of 75.0 was shown at age 5.8. Of the age groups of boys older than 6.3, three achieved better than the class average of 43.5. Of the age groups younger than 6.3 none achieved better than the class average.

The girls' average rank of 34.0 was 9.5 ranks above the class average. The boys' average rank of 51.9 was 8.4 ranks less than the class average. The difference between the averages of the girls and boys was 17.9 ranks.

A summary of the findings, conclusions, and recommendations is presented in Chapter 4.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The relationship between the age a child enters first grade and his subsequent academic achievement was investigated in this study. A review of published literature was made to determine what studies had been conducted and what had been revealed on age of entrance and its relationship to achievement. The school records of the 1948 first grade class in the Livingston, Montana, Public School systems were examined and 85 children were selected for this investigation. From the school records of these students comparisons were made to determine if there was a relationship between entrance age and achievement.

In the review of literature there were certain significant findings revealed. First, a child's admission to the first grade was set by state school law and generally chronological age was used as a basis for admission. Second, although reports on studies have not made positive commitments concerning a minimum chronological entrance age, there was clear indication that a chronological age of at least 6.0 when entering first grade was desirable. Third, because girls generally mature mentally and physically faster than boys, girls usually achieve scholastically better than boys during early years in school.

In this investigation it was found that older age groups 6.3 through 6.10 performed 7.8 achievement ranks better academically than the younger age groups 5.8 through 6.3 when a comparison of school age entrance with the combined means of the fourth, eighth, and twelfth grade achievement ranks was made. The 85 students of this study were separated into two groups, 5.8 through 6.3 and 6.3 through 6.10. Age group 6.3 was included in both groups for balance making eight months in each group. The 44 younger students had a mean achievement rank of 44.0. The mean achievement rank of the 49 older students was 36.2.

The older age groups also performed 8.2 achievement ranks above the younger age groups at the fourth grade level, 9.3 achievement ranks better at the eighth grade level, and 6.1 achievement ranks superior at the twelfth grade level.

When the girls' achievement was compared with the boys' achievement, the class average of girls was higher than the class average of boys at the fourth, eighth and twelfth grade levels. The differences between the averages of the girls' and boys' achievement became progressively greater at each of the grade levels checked. Of the age groups of boys younger than 6.3 upon entrance into the first grade, none achieved the twelfth grade class average.

Conclusions

In the group studied in this investigation the 49 students who entered school at age 6.3 and older were on the average 6.1 achievement ranks higher in the class when they completed the twelfth grade than the 44 students who entered school at age 6.3 and younger. The older groups showed consistently higher average achievement ranks than the younger groups at the fourth and eighth grade levels. Although no test of significance was made, it is believed that the approximate 10 percent increase in rank is significant. If this study were to be extended to include adequate sampling of representative classes and the same results were to be found, one could conclude that substantial improvement in achievement rank of those entering school older than age 6.3 over those entering school under age 6.3 could be expected.

Recommendations

In order to base school entrance on chronological age, the writer feels that further investigation by states should be conducted on entrance age and subsequent academic achievement. Investigations should include a large enough sampling so findings would be acceptable as statistically significant. These findings could then be used by states as a basis for setting a minimum entrance age.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Birch, Jack W., "Early School Admission for Mentally Advanced Children," Exceptional Children 21: 84-87, December, 1954.
- Carter, Lowell B., "Effect of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools," Journal of Educational Research 50: 91-103, October, 1956.
- Cone, Herbert R., "Brookline Admits Them Early," Nations Schools 55: 46-47, March, 1955.
- Forester, John J., "At What Age Should a Child Start School?" School Executive 74: 80-81, March 1955.
- Gates, Arthur I., and others, Educational Psychology, Macmillan and Co., New York, 1950, 3rd ed., p. 294.
- Hamalainen, Arthur E., "Kindergarten-Primary Entrance Age in Relation to Later School Adjustment," Elementary School Journal 52: 406-411, March, 1952.
- Hildreth, Gertrude H., "Age Standards for First Grade Entrance," Childhood Education 23: 22-27, September, 1946.
- Hobson, James R., "Mental Age as a Workable Criterion for School Admission," Elementary School Journal 48: 312-321, February, 1948.
- King, Inez B., "Effect of Entrance Age into Grade I Upon Achievement in Elementary School," Elementary School Journal 53: 331-336, February, 1955.
- McLaughlin, Katherine L., First Grade Readiness and Retardation, Los Angeles: The Research Committee of the California Kindergarten-Primary Association, 1928, 36 pp.
- Morphett, M. V., and Washburne, C., "When Should Children Begin to Read?" Elementary School Journal 31: 496-503, March, 1931.
- National Education Association, Minimum Admission Age for Kindergarten and Grade I, Urban School Districts, 1953-54 NEA Research Division, National Education Association, p. 3, 1954.

Nation's Schools, "Should Beginning Pupils be Admitted on Mental Age?" Nation's Schools 56: 6, August, 1955.

Pauly, Frank R., "Sex Differences and Legal School Age," Journal of Educational Research 45: 1-9, September, 1951.

Raybold, Emma, "Reading Readiness in Children Entering First Grade," Third Yearbook of Psychology and Educational Research Division, School Publication No. 185, Los Angeles School District, 1929, pp. 98-110.

Shields, Reed L., "A Study of Some Factors that are Related to Success and Failure in the First Grade Program of School District I, Missoula, Montana," Unpublished Master's Thesis, Montana State University, Missoula, 1956.

Thomson, Jennie Lloyd, "Big Gains from Postponed Reading," Journal of Education 142: 445-446, October, 1934.

APPENDIX

APPENDIX A

RAW DATA

<u>C.A.</u>	<u>Male or Female</u>	<u>Rank at Grade 12</u>	<u>Ach. Test Score Grade 8</u>	<u>Ach. Test Score Grade 4</u>
5.8	F	24	11.2	5.5
5.8	M	75	9.7	4.2
5.9	F	7	10.5	4.3
5.9	F	25	8.5	4.0
5.9	F	33	8.4	3.5
5.9	F	48	8.5	3.8
5.9	M	57	9.6	4.0
5.10	M	14	12.2	5.1
5.10	M	46	8.3	4.3
5.10	F	62	10.4	4.4
5.10	M	74	8.2	3.8
5.10	M	76	7.9	3.9
5.10	M	85	9.6	4.3
5.11	M	38	10.1	4.7
5.11	F	48	10.7	4.3
5.11	F	52	10.8	4.8
5.11	M	57	10.1	4.8
5.11	F	66	9.8	4.3
6.0	F	21	10.3	4.9
6.0	F	21	8.5	4.0
6.0	F	29	7.9	4.4
6.0	F	31	8.8	4.2
6.0	M	33	10.7	4.5
6.0	M	64	7.5	4.4
6.0	M	70	8.0	4.0
6.0	M	70	8.1	3.6
6.1	F	44	8.7	4.3
6.1	M	53	10.3	4.8
6.1	M	55	9.8	4.8
6.1	M	61	6.8	3.4
6.1	F	70	7.8	3.5
6.1	F	80	8.5	3.5
6.2	F	20	10.4	4.4
6.2	M	39	9.9	4.5
6.2	F	39	7.3	4.5
6.2	M	70	7.7	4.4

APPENDIX A (continued)

<u>C.A.</u>	<u>Male or Female</u>	<u>Rank at Grade 12</u>	<u>Ach. Test Score Grade 8</u>	<u>Ach. Test Score Grade 4</u>
6.3	M	7	11.8	4.7
6.3	F	9	11.3	5.2
6.3	F	10	11.0	4.9
6.3	M	12	11.5	5.0
6.3	F	19	10.3	4.3
6.3	F	32	8.4	5.1
6.3	M	36	11.9	5.8
6.3	M	46	9.8	3.8
6.4	F	5	12.0	5.4
6.4	F	21	10.5	4.4
6.4	M	27	11.7	4.9
6.4	M	28	11.1	4.5
6.4	F	35	11.7	6.0
6.4	F	39	9.0	3.5
6.4	F	50	8.7	4.1
6.4	F	63	7.6	3.8
6.4	F	77	8.7	4.6
6.4	F	79	9.6	4.2
6.5	M	1	12.0	4.8
6.5	F	3	11.9	4.7
6.5	F	5	12.1	4.7
6.5	F	12	11.8	5.6
6.5	F	14	10.8	4.9
6.5	F	26	10.5	4.0
6.5	M	42	9.5	4.2
6.5	F	50	7.8	4.6
6.5	F	56	8.9	4.2
6.5	M	83	8.3	3.9
6.6	F	17	9.5	3.9
6.6	M	30	10.6	4.2
6.6	F	45	10.6	4.6
6.6	F	54	7.8	4.3
6.6	F	57	7.9	3.7
6.6	M	65	10.0	5.4
6.6	F	68	9.6	3.9
6.6	M	84	6.7	3.5
6.7	F	11	12.2	6.0
6.7	M	43	9.0	4.3
6.7	M	69	10.3	4.5

APPENDIX A (continued)

<u>C.A.</u>	<u>Male or Female</u>	<u>Rank at Grade 12</u>	<u>Ach. Test Score Grade 8</u>	<u>Ach. Test Score Grade 4</u>
6.8	F	4	11.4	4.6
6.8	F	18	11.9	5.4
6.8	M	57	9.3	4.0
6.8	F	67	7.7	3.8
6.8	M	78	7.0	3.6
6.9	M	2	12.0	5.4
6.9	M	81	8.5	4.2
6.9	M	82	9.0	4.5
6.10	F	16	11.7	5.5
6.10	M	37	9.8	5.0