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Study of some factors that are related to success and failure in the first grade program of School District 1 Missoula Montana

Reed Livingston Shields

The University of Montana

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A STUDY OF SOME FACTORS THAT ARE RELATED TO SUCCESS AND FAILURE IN THE FIRST GRADE PROGRAM OF SCHOOL DISTRICT 1, MISSOULA, MONTANA

by

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B. Ed., University of Alberta, 1948

Presented in partial fulfillment of the requirements for the degree of Master of Arts

MONTANA STATE UNIVERSITY

1958

Approved by:

[Signatures]

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CHAPTER I

INTRODUCTION

An increasing number of schools recognize that reaching the age of six years or near six years does not automatically equip a child to perform adequately in the typical first grade program. Teachers are aware of the great difference that exists among six year old children. It is quite obvious that some of these children are only as mature as average kindergarten children, while at the other extreme, others are as mature as average second grade children, or seven year olds. To-day more than ever before recognition of individual differences in the mental, physical and social areas has extensive implications on the educational program and the teaching techniques. To confront an immature child with tasks for which he is not ready leads to frustration and failure. Educators are therefore trying to better understand the kinds of maturity that are necessary for success in the first grade program. Each school community has the problem of developing a school policy with respect to school entrance requirements that is compatible with the state laws, the
community educational philosophy, and the school program.

Statement of the problem. The policy of School District 1, the Missoula, Montana elementary public school system, states that a child must be six years of age by November 1, to gain automatic entrance to grade one. A child whose sixth birthday falls between November 1 and December 31 may be admitted on the basis of a school readiness evaluation. There is cumulative evidence that these children of the latter group who are admitted are, with few exceptions, good first grade risks. However, it has become evident that a significant number of entering first graders, especially those whose birthdays are near the deadline of November 1, do not achieve success in the first grade program. It seems probable, therefore, that many of these children would fail a readiness test given at the time of school entrance, and hence give indication that they would be poor risks for succeeding in the first grade program.

Significance of the problem. These children whose birthdays are late, who are immature or non-ready for the first grade program create problems in the school system. A kindergarten-like program or an extended reading and number readiness program is warranted for them. The progress and general success of these students usually becomes
a matter of great concern to the school, the parents, and the child. Promotion problems and case studies increase in number for this group. Trying to force such children through the regular first grade work leads to frustration, unhappiness, and loss of interest and self-confidence.

**Purpose of the study.** The nature of this study was to show the relationship between achievement in the Missoula elementary school first grade program, and maturity as measured by chronological age and mental age. The hypothesis tested was that a considerable proportion of the children who have late birthdays, that is, late for school entrance, and who are average or less in scholastic ability, find the first grade program in School District 1 too great a challenge.

**Scope of the study.** This study was made in School District 1 of Missoula, Montana, with the first grade pupils of the school year 1954–55. School District 1 is an elementary school system of thirteen schools, with one hundred fifty-two teachers, twelve principals, and a special service staff of ten. The number of first grade classes was twenty-five. Only the first graders for whom intelligence test scores and Stanford Achievement Test scores were available, and who also completed the 1954–55 school year were used in the study. This total number
was 467: 243 boys, 215 girls.

Limitations of the study. Although this study was made over a period of only one year, logically we may assume that had a period of several years been used the accuracy of the results would have been improved. The instruments used to measure mental age and scholastic ability were group tests. Individual tests of such would have better reliability.

Although the Otis Quick Scoring Mental Ability Test Form A - Alpha is designed for grades one to four, it has been found slightly difficult for beginning first-grade pupils, and hence not quite adequate for their use.1

The Primary Battery: Form C, Stanford Achievement Test organization is composed of a battery of five subtests. These are paragraph meaning, word meaning, spelling, language and arithmetical reasoning.

The use of this test at the first grade level has been questioned on the grounds of validity and usability. The Stanford Achievement Test represents some of the best practice in this field of testing. From the point of view of the elementary school curriculum, however, the content material in this test is not representative of

sound, generally approved practice.²

The primary test, in particular the paragraph meaning section, is most open to question. Here requiring a written response from the students seems unsuitable. The difficulty is increased by blanks which are too small for the normal handwriting of the primary child. Few of the paragraphs and few of the items in the word meaning section are simple enough to provide a sure measure of the ability of the poor reader.³


CHAPTER II

BACKGROUND INFORMATION AND RELATED STUDIES

The first part of this chapter will be concerned with authoritative statements on the relationship between reading and maturity. The second part will be composed of information on studies similar to this one.

I. BACKGROUND INFORMATION

The extent that a child's growth pattern coincides with the efforts of a teacher or a school to change him, may be beneficial or detrimental to his well being. Children who are forced often build up a resistance to reading which can be attributed to pressure to read before the child is ready for it.

Gleson and Hughes have offered the following statement of this behavior:

Differences in growth among children of the same age, make for differences in reaction to the environment that is supplied. The child is not a passive recipient of stimulation. He reaches out for it according to the maturity of his total and partial growth and the energy at his disposal. He reacts selectively to the surroundings that are supplied and creates his own world of experience within them. He tends to reject the experiences for which he is not ready. Teachers may make full use of "seeking"
behavior by providing a school environment in which children may find suitable experiences of a wide variety in kind and difficulty.\textsuperscript{4}

Coghill believes that as long as the brain and nervous system are growing as a result of maturation of neurons, there tends to be an internal motivation of behavior. The child strives for perfection of patterns or acquisition of learning without being tutored. The existence of a structure in a child implies a drive toward its functioning. The child strives to change, or exploit his environment in a wide variety of ways. Therefore the parents and teachers should set the stage of the educational program, and channel the activities for the child to best meet his maturational development.\textsuperscript{5}

If the necessary maturity is at hand, the child shows great reliability in adjusting himself to the requirements and experiences set up in the school. The young child tends to adjust rapidly to external changes and incentives, so that internal motivation is only part of the story of achievement. The other part of importance lies in outlining an educational program in reading and

\textsuperscript{4}Willard C. Olson and Byron C. Hughes, "Concepts of Growth — Their Significance to Teachers," \textit{Childhood Education}, XXI:53-63, October, 1944.

related subjects which will be adjusted to the maturational age level and abilities of the beginning school student; or selecting an educational program with achievement standards and then setting the policy for the age level for the beginning students.

**Pacing as an educational method.** This method is keyed to the developmental pattern of the child. Maturation and potential ability are carefully evaluated. Much reliance is placed on the seeking behavior of the children. The child reaches out for reading according to the maturity of his total and partial growth, and the energy at his disposal. He reacts selectively to the surroundings that are supplied and creates his own world of experience within them. He tends to reject the experiences for which he is not ready. Teachers and parents must be willing to relax, wait and let nature take its course. Supporters of this technique suggest that if given time, children might also learn to read without special instruction in much the same natural fashion that they learned to talk.

Pacing implies that the school program be adapted to the seeking behavior of the child.

"When should a child learn to read?"

"When he is ready."

"How can you tell when a child is ready to read?"

"He will tell you."
He becomes willing to spend time with pictures and books. He asks questions about letters and words and numbers. He pretends to read and to write. He takes suggestions and help, and asks for more.

In Winnetka, Illinois, one first grade class was not started in reading until the middle of the second grade. Each child in the class was carefully matched for intelligence and other characteristics with three children in other classes which started reading at the beginning of the first grade. The delayed class caught up with the others in reading ability by the end of the third grade, was a half year ahead by the end of the fourth grade, and was one and a half years ahead, on the average, by the end of the eighth grade. While this study does not prove the desirability of postponing reading for all children, it certainly casts some doubt upon the advisability of rushing children into reading as soon as they reach the first grade level.

Delaying as an educational method. Delaying implies postponing the introduction of a subject or skill until a later time, which may, in turn, exclude some children from the experience when they are ready. The idea behind the

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C. Ramsdell, "Individualized Plan of Instruction in Winnetka, in Adjusting Reading Programs to Individuals," Supplementary Education Monographs, No. 52, 1941 (University of Chicago Press), 90–95.
"delaying" method is that more children will succeed at the task when they are older.

In 1931, Morphett and Nashburne reported the results of an investigation in which it was found that failures in reading among first grade children in Winnetka, Illinois decreased, up to a mental age of six and a half years, and after that point almost everyone passed. This finding has frequently been cited as indicating that a mental age of six and a half years is necessary in order to learn to read. Some schools, therefore, have adopted the policy of postponing the first lessons in reading until the children have a mental age of six and a half years.

It may be argued, however, that Morphett and Nashburne's results show only what may happen under one program of instruction. The study does not tell how the results might vary according to the difficulty of the materials used, the methods of teaching employed, and the passing standards in force.

Forcing as an educational method. The forcing technique may be described as, "Here I come, ready or not." It is taken for granted that all children should read in the first grade. The idea is that most children

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can learn to read if the right approach is made — or the teacher is clever enough. Dunlin is insistent that reading failure in the first grade can be largely eliminated through the use of appropriate teaching methods. The exact methods, however, are not outlined.

The general ideal is that learning to read can be adequately related to the methods and materials of instruction, for any age.

By adapting the materials and methods to the needs of the case, Gates demonstrated that children of mental age of five can be taught to take their first steps in reading. But Gates said this of his study, that "although the data seem to indicate that it is possible to organise materials and methods to teach children to read at a mental age of five or higher, the data does not imply in any way that it is desirable to do so." Neither do the data indicate that the children should not be taught.

Two questions arise with reference to the above results: Is the effort worth it? Are the results permanent? Soney and Agnew conducted an investigation which

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ears on the first question. The slower pupils took over-
whelmingly more of the teacher's time and had less achieve-
ment to show for it in the end. Some of the slower pupils
in Roney and Agnew's study required from six to ten times
as much teacher time to grow a month in reading in the
first grade as they did to gain a month in the third
grade.10

The question of permanence of the gains achieved
through special efforts to teach immature children to
read has been largely neglected. The work of Keister,
however, is directly to the point. His results indicate
that it is very unlikely that anything is gained in the
long run from premature attempts to teach children to
read. He followed the progress made in reading by three
groups of children who were mainly five years old. The
gains made seemed to lack permanence and tended to
disappear during the summer vacation between grades one
and two. The children had forgotten so much that when
they returned to school they were for the most part far
from ready for the second grade. They did not subsequently
recover their losses, but tended to remain behind by about
as much as they were at the beginning of the second grade.11

10DeWitt Roney and Kate Agnew, "Periods of Awaken-
ing or Reading Readiness," Elementary English Review, xiv:183-
87, May, 1937.

11E. V. Keister, "Reading Skills Acquired by Five-
Year-Old Children," Elementary School Journal, xli:587-96,
April, 1941.
These results can be interpreted to mean that it might have been better to wait in the first place until the children were older before introducing them to reading.

II. LITERATURE ON SIMILAR STUDIES

Relationship between reading achievement and mental maturity. A distinct relationship does exist between reading achievement and mental status. Mepham and Washburne were not the first or the last to advocate a minimum mental age for beginning reading.\(^{12}\) In a study of the causes of non-promotion in the first grade schools in Los Angeles and San Diego, McLaughlin reported that the chief factor was insufficient mental maturity for learning to read.\(^{13}\) Raybold also found that mental immaturity was the chief cause of non-promotion in the first grade. Pupils entering the first grade with a mental age of seventy-six months, however, were almost always promoted.\(^{14}\) A study by Thomson revealed that children with mental ages of at least six before reading instruction was begun liked reading better

\(^{12}\)Isabel Vogel Mepham and Carleton Washburne, loc. cit.

\(^{13}\)Katherine L. McLaughlin, First Grade Readiness and Retardation (Los Angeles: The Research Committee of the California Kindergarten-Primary Association, 1928), 35 pp.

and made faster progress than younger children.15

The effect of age entrance in Grade I upon achievement. King sought the answers to the following questions:

1. How does the achievement of pupils who enter Grade I early in terms of chronological age compare with that of children who enter Grade I approximately eight months later (achievement to be measured on the basis of performance at the end of the sixth grade)?

2. Do younger entrants tend to be retained more often than older entrants?

3. Are boys more frequently retained than girls?

4. How does the average daily attendance for the younger entrants compare with that of the older entrants?

5. Are there more "problem children" among younger than among older entrants?

The study indicated that having attained a few additional months of chronological age at the beginning of grade one is an important factor in a child's ability to meet imposed restrictions and tensions that the school necessarily presents. In answering the previously outlined questions, King suggests that the following can be expected:

1. Young entrants will have difficulty attaining up to grade level in academic skills and a large portion of them may fall far below grade level standards. Older entrants are more likely to achieve up to and beyond grade level standards.

2. A larger number of younger entrants will have to repeat a grade.

3. More boys than girls will repeat a grade.

4. Average daily attendance will be lower among younger entrants.

5. Younger entrants are likely to show more indications of poor personal and social adjustment in school.16

Sex differences in achievement. A fairly consistent finding in the elementary grades is that girls are better than boys on the average in reading comprehension, vocabulary, and basic language skills. Without being actually aware of it, schools with a policy of grade failure retain boys in grades often times longer than girls, so that the average boy requires from three to six months longer to complete the grades of an elementary school.

Alden, Sullivan and Durrell made a study of a group of 6,000 children from grades two through six. In this study, 18.6 per cent of the boys were classified as retarded in reading, as compared with 9.8 per cent of the girls.17 In a study of the 100 poorest readers in a large population of elementary school pupils, Wittig and Kopel found that 66 were boys and 34 girls.18

The fact that boys tend to be slower than girls

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in all the language functions suggests that some general factor like growth is at work favoring the girls, and that it is not a matter of specific language entities. Many of the differences reported between boys and girls are in one sense probably not sex differences but maturity differences. Age for age, the girls regularly exceed the boys in eight out of ten comparisons, where five out of ten would be the result of chance.19

The differences then between reading achievement of the sexes in grade one, merely substantiates the importance of growth or age in reading achievement.

19Uuillard C. Olson and Byron O. Hughes, loc. cit.
CHAPTER III

PROCEDURE AND PRESENTATION OF DATA

I. CHRONOLOGICAL AGE AS RELATED TO SCHOOL ACHIEVEMENT

The data with regard to the scholastic achievement of the 437 first grade students grouped according to month of birth are presented in Figure 1, page 10. The scholastic achievement was represented by the Stanford Achievement Test scores which were scaled on the vertical axis from 1.2 to 3.4 grade levels. The age of beginning students, as of September 1, 1954, was plotted on the horizontal axis, ranging from six years nine months (6-9) for November, 1953, to five years, ten months (5-10) for September, 1954. For example, the fourth bar graph from the left shows the achievement of the students with February birthdays who had a chronological age of six years six months (6-6) at school entrance. As indicated by the wide dark horizontal line on this bar graph, the average achievement for this group is 2.04 grade levels. This is below the Missoula median of 2.14, as indicated by the dotted line, but above the national norm of 1.85 as indicated by the solid line. This bar graph shows the performance for the middle fifty per cent of the thirty-four students (n = 34) in the group to range from 1.5 to 2.7 grade levels.
FIGURE 1

STANFORD ACHIEVEMENT AVERAGE BATTERY SCORES
FOR 457 FIRST GRADE STUDENTS AS GROUPED BY MONTH OF BIRTH
the first group of the students and the
reference for the following example: the total group of
the postoperativemale were divided with these purposes of
sected on the western axis from 1.0 to 3.0 % grade level.
by Figure 2. Page 50. The spuriousness scores were
sees of the age in comparison agreement to proceeds the
some idea of the relative difference between the

II. SEX DIFFERENCES AS RELATED TO ACHIEVEMENT

the six younger groups, the ratio was one to two.
the median was below we in the ratio of two to one. For
median were below we in the ratio of two to one. For
exceeded the majority median as compared to those whose
the six older groups? the number whose median achievement
three the six groups ranged from 110 to 116 with respect to
achievement of 2.07. The average intelligence scores for
2.1, 2.15, 1.96, 1.99, 2.95 and 2.12 with a total median
october and median achievement grade level scores of
the groups whose months of birth ranged from may to
these six groups ranged from 104 to 112. The younger
the average intelligence scores for
(3) from the effect. The average intelligence scores for
the groups whose months of birth ranged from may to
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FIGURE 2

A COMPARISON OF ACHIEVEMENT SCORES
FOR TOTAL GROUP, GIRLS' GROUP, BOYS' GROUP
boys' group of 242 students. The median grade level for the total group of 457 students (see bar graph on the left) was 2.14; the median grade level for the boys' group (see the bar graph at the right) was 2.03, while that of the girls' group (see center bar graph) was 2.3 grade levels. The middle fifty per cent grade level scores for the girls' group ranged from 1.9 to 2.95; for the boys' group the range was 1.7 to 2.45 grade levels. The twenty-fifth percentile grade level score for the girls' group (indicated by the bottom of the bar graph) shows an achievement that is approximately two months higher than that of the male group; while the seventy-fifth percentile grade level score for the girls' group (indicated by the top of the bar graph) depicts a superiority of performance of five months over that of the boys.

Figure 3, page 22, represents a more detailed break-down of Figure 1, page 18, by showing the average battery achievement for each sex of each age group. This figure shows that the ratio of the number of girls' groups which have a median achievement above the Missoula median, 3.14, as compared to those below is two to one. For the boys' group this ratio is one to two. As previously stated about Figure 1, page 18, with respect to the six young groups, the ratio of the number of groups that exceeded the Missoula median, as compared to those who were
Average Group I.Q.'s

104 108 109 108 103
106 110 109 110 113
110 111 106 109 113
110

Age of Beginning Students as Sept. 1, 1954

6-9 6-8 6-7 6-6 6-5 6-4 6-3 6-2 6-1 6-0 5-11 5-10

FIGURE 3

STANFORD ACHIEVEMENT AVERAGE BATTERY SCORES
FOR AGE GROUP GRAD 7-8 BOYS AND GIRLS GROUPED ACCORDING TO MONTH OF BIRTH
below was one to two. This indicates more clearly that the boys contributed more to the number of grade level scores below the Missoula average in the younger age group.

III. MENTAL AGE AS RELATED TO ACHIEVEMENT

Table I, page 24, was structured to hold chronological age constant so that the variable effect of mental age on school achievement could be discerned. Chronological age was scaled along the vertical axis with three intervals of "70-73" months, "74-77" months, "78-81" months. Mental age was placed along the horizontal axis in five intervals from "less than 60" months to "greater than 80" months. For each of the fifteen sections thus formed several evaluative criteria were used. For example, the twenty-four students in the third section from the left, second section up from the base axis had chronological ages from seventy-four to seventy-seven months, and mental ages from seventy to seventy-six months. It will be noted, by using the key at the bottom of the table that these children had a median grade level of achievement of 1.9; 12.5 per cent were retained in grade one; fifty-four per cent achieved below the Missoula median of 2.14; and forty per cent achieved below the national norm of 1.85. Reading from left to right in Table I, with the chronological age remaining constant and the mental age increasing, the
### Table I

<table>
<thead>
<tr>
<th>Mental Age</th>
<th>% of Group</th>
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<th>% of Group</th>
<th>% of Group</th>
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<th>% of Group</th>
<th>% of Group</th>
<th>% of Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>6.0</td>
<td>2.0</td>
<td>1.0</td>
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<td>1.0</td>
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<td>2.0</td>
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<tr>
<td>4.0</td>
<td>6.0</td>
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<td>2.0</td>
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<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**Note:** The chart above represents the mental ages of various groups. The percentages indicate the distribution of mental ages within each group.

**Chromatic Scale:**
- 60-70: 70-77
- 70-79: 77-83
- 79-89: 83-93
- 89-99: 93-100
- 100-110: 100-110
- 110-120: 110-120
- 120-130: 120-130
- 130-140: 130-140
- 140-150: 140-150

**Mental Age Range:**
- 50-60: 50-56
- 60-70: 56-62
- 70-80: 62-68
- 80-90: 68-74
- 90-100: 74-80
- 100-110: 80-86
- 110-120: 86-92
- 120-130: 92-98
- 130-140: 98-104
- 140-150: 104-110

**Key:**
- X = median of all scores
- 1. Appearance of median vote of group
- 2. Percent of group of the highest age
- 3. Percent of the group above the institutional average
- 4. Percent of the group above the institutional average
median grade level of achievement increases; and the per cent achieving below the Missoula average and the national norms decreases. Interesting observations may be made with respect to the "70-73" months chronological age group whose mental ages are "60-69" months. (Note the second section from the left, bottom row.) These are some of the so-called late birthday children, whose birthdays fall in July, August, September and October. The highest intelligence quotient of any member of this group was approximately 100. For this group of the so-called late birthdays, sixty-nine per cent were retained in grade one; 93.8 per cent achieved below the Missoula average; and seventy-five per cent achieved below the national norm.

IV. A MENTAL AGE INDEX

Figure 4, page 27, is a mental age index related to the per cent of pupil failures, and the per cent of pupils achieving below the national norm of 1.85, and below the Missoula average in the grade one program. Mental age was plotted on the vertical bar with a range of "57-105" months. The data representing the per cent of failures in grade one that occurred in the school year of 1954 to 1955 were scaled to the right of the index. scaled to the left was the per cent of grade one students
achieving below the national norm, and also those achieving below the Missoula average. Some interesting observations may be made from this index concerning the promotion policy in School District 1. It may be noted that of the group whose mental ages were approximately sixty-five months and less, 100 per cent were retained in the first grade, 95 per cent achieved below the national norm, and 100 per cent achieved below the Missoula average. The five per cent who achieved a grade level score above the national norm were retained in grade one. The following reasons may be advanced to explain this retention, namely, the lack of validity of the achievement test scores, the discrepancy between the teacher's estimate of a child's performance and the performance indicated by the test results, and the teacher variable in the promotion policy. At the top of the mental age index, at "107" months, Figure 4 shows that 8.3 per cent of the population of 457, that is thirty-eight, were retained in the first grade; twenty-four per cent achieved below the national norm, and forty-four per cent achieved below the Missoula average. It is interesting to note the data on Figure 4 that pertains to the group whose mental ages are 5-11 and less. Of this group in which the mental age is seventy-one months and less, fifty-nine per cent were retained
in the first grade; seventy-five per cent achieved below the national norm; and eighty-four per cent achieved below the Missoula average. These same figures would approximate the achievement of those children born in September, October, and November who have an intelligence quotient of 100 and less, that is, their mental ages are 5-11 and less. Yet of these three groups only the November and October birthday children are required to take the school entrance readiness evaluation check.

Table II, page 29, makes further use of mental age as an index. It shows the number (N) of grade one pupils for each interval of mental age; and for each interval the number and the per cent of those retained; the number and per cent of those achieving below the national norm; the number and per cent of those achieving below the Missoula norm. For example, the number of grade one students who had a mental age of "70-71" months was nineteen. Of this group eight or forty-two per cent were retained in grade one, eleven or fifty-eight per cent achieved below the national norm of 1.85, and fourteen or seventy-four per cent achieved below the Missoula average of 2.14. This data should be approximately the same for the students born in September and October whose intelligence quotients are 100.
### TABLE II

**Classification of 457 Grade One Students in Mental Age Groups and the Comparative Distribution of These Students According to the Number of Failures, the Number Below the National Norm, and the Number Below the Missoula Average, and the Corresponding Percentages of Each**

<table>
<thead>
<tr>
<th>Mental age in months</th>
<th>%</th>
<th>Students retained per cent</th>
<th>Students below the national norm per cent</th>
<th>Students below Missoula average per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>number</td>
<td>number</td>
<td>number</td>
</tr>
<tr>
<td>100-107</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>98-99</td>
<td>10</td>
<td>23</td>
<td>23</td>
<td>20</td>
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<td>96-97</td>
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<tr>
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<td>28</td>
<td>8</td>
<td>31</td>
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</tr>
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<td>88-89</td>
<td>35</td>
<td>8</td>
<td>40</td>
<td>12</td>
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<td>84-85</td>
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<td>52-65</td>
<td>15</td>
<td>100</td>
<td>100</td>
<td>15</td>
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</table>
and less. Table II shows that the greater percentage figures for those retained, those achieving below the national norm, and those achieving below the difficult average are at the lower end of the mental age intervals.
CHAPTER IV
SUMMARY AND RECOMMENDATIONS

I. SUMMARY

Figure 1, page 18, showed the relationship between achievement in the Missoula elementary school first grade program, and maturity as measured by chronological age. The older six months group whose birthdays were in the months from November to April and whose chronological age ranged from 6-9 to 6-4 at school entrance, had an average intelligence quotient of 109 and a median achievement score of 2.22. The younger six months group whose birthdays were in the months from May to October and whose chronological age ranged from 6-3 to 5-10, had a higher average intelligence quotient of 113 and yet lower average achievement score of 2.07.

Figure 2, page 30, shows the comparative achievement between scores of the boys' group (N = 243) and the girls' group (N = 213) as well as the achievement for the total group (N = 457). The average intelligence quotient for the total group was 110. The Missoula average achievement score was 2.14 as compared to the national norm of 1.85. The girls' average intelligence
quotient was 110, and the median achievement score 3.2.
The boys' average intelligence quotient was also 110,
yet the average achievement score was lower, at 2.08.
With respect to the above average I. Q., it is interes-
ting to note the following statement quoted by Cronbach:

100 equals the average I. Q. in unselcted
population (theoretical); 104 equals the minimum
I. Q. for satisfactory (that is average) work in
the high school academic curriculum; and 107
equals the mean I. Q. of high school seniors.1

Figure 3, page 22, shows the average battery
achievement for each sex for each age group. The boys'
average achievement for 3.08 compares with the achieve-
ment of the younger six months group of pupils which
was 2.07 grade levels. The girls' average achievement
3.2 compares with that of the older six months group,
which was 2.32 grade levels. The differences then be-
tween scholastic achievement of the sexes in grade one
is apparent.

Table I, page 24, shows the relationship between
achievement in the Missoula elementary school first grade
program of 1954-55 and maturity as measured by mental age.
With the chronological age remaining constant and the
mental age increasing, the median grade level of achieve-
ment increased, the per cent achieving below the Missoula

1Cronbach, Lee J., Essentials of Psychological
Testing (New York: Harper and Brothers, 1949), p. 124,
Table 18.
average and the national norm decreased.

Figure 4, page 28, shows the low level of scholastic work accomplished by the group whose mental age was less than 6-0 at school entrance. Fifty-nine per cent or roughly six out of ten were retained in grade one; seventy-five per cent or three out of four achieved below the national norm; eighty-four per cent or eight out of ten achieved below the Missoula average. It is pertinent to note here that a significant portion in this group were those whose birthdays were in September and October whose intelligence quotients are 100 and less.

Table II, page 39, shows specifically how each mental age group performed in the grade one program. For the students in the "70-71" interval, forty-two per cent were retained; fifty-eight per cent achieved below the national norm and seventy-four per cent below the Missoula average. For the "69-69" interval, thirty-eight per cent were retained; sixty-nine per cent achieved below the national norm and eighty-four per cent below the Missoula average. For the "68-67" interval sixty per cent were retained; eighty per cent achieved below the national norm; and 100 per cent were below the Missoula average. In the last interval "53-55", 100 per cent were retained; eighty per cent achieved below the
national norm; and 100 per cent failed to achieve the Missoula average.

II. RECOMMENDATIONS

It is evident from this study that a good number of children are entering the School District 1 first grade with insufficient scholastic ability to perform adequately in the first grade program. A significant number of this group are those who have late birthdays, but who are not required to be tested for entrance. It seems unjust to permit these children, particularly those who are not yet six at the time of school entrance and who are average or lower in scholastic ability, to be allowed to enter. Such pupils are not mature enough to handle the prescribed first grade program; and, as this study indicated, they are competing with a more scholastically mature group.

The law in Montana permits a child to start school at six years of age, yet he does not have to start until he is eight years of age. This means that at the time of school entrance a school board can reject a child who is less than six. Therefore, it is recommended that at least all this group of children be tested. This would make the entrance date September the first, and would
require all those whose birthdays are in September, October and November to be tested.

It is recommended that a similar follow-up study be done over a longer period, for example, a period of three years. This would by-pass the difficulty evidenced in this study by using the Stanford Form S Achievement Test at the end of the first grade program.
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