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A STUDY OF THE RELATIONSHIP BETWEEN DROP-OUTS,
ACHIEVEMENT, AND INTELLIGENCE FROM EIGHTH GRADE
THROUGH HALF OF THE NINTH GRADE IN SCHOOL DISTRICT
NUMBER ONE, MISSOULA, MONTANA

by

LOUIS JOHN GAGERMEIER

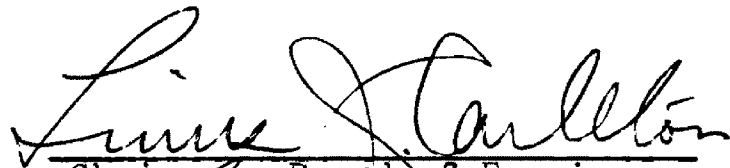
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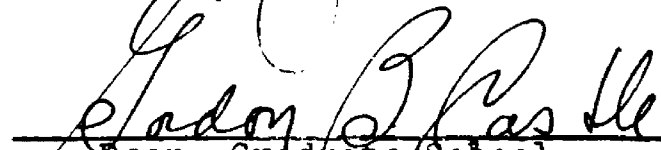
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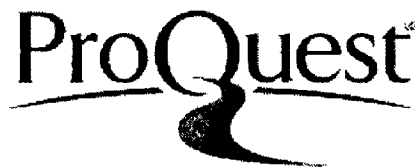


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CHAPTER I

THE PROBLEM, HYPOTHESIS AND DEFINITIONS OF TERMS USED

I. THE PROBLEM

The purposes of this study were: (1) to discover the number and percentage of students of the 1952-53 eighth grade graduating class of School District Number One, Missoula, Montana who dropped out of school before completing the first half of the Freshman year in high school; (2) to compare the achievement scores of these drop-outs with the achievement scores of those students who did not drop out; (3) to compare the intelligence of those drop-outs with the intelligence of students who did not drop out; (4) to determine the success in high school of those 1952-53 eighth grade graduate students with low intelligence and/or low grade school achievement; and (5) to attempt to discover ways of predicting, and possibly preventing, drop-outs.

II. HYPOTHESIS

The hypothesis to be tested by this study was that drop-outs tend to be low in intelligence and low in achievement.

III. DEFINITIONS OF TERMS USED

Drop-outs. Drop-outs, as it will be used in this

paper, refers only to those students who complete the eighth grade, but either do not enter, or do not finish the first two quarters of their Freshman year in high school. In this study, if the families moved out of town, the students were removed from the list. Therefore, all students considered as drop-outs in this study, either did not enter high school, or left it within two quarters.

Eighth grade graduates. This term includes only graduates from the eighth grades of School District Number One, Missoula, Montana. Parochial school students are not included.

High school. This term includes Missoula County High School and also the parochial high schools.

IV. ORGANIZATION OF PAPER

The next topic to be considered in this paper will be a review of literature pertaining to the study. Following this are chapters concerning methods of gathering material and the organization of material. The chapter following these covers comparison of achievement and intelligence of drop-outs with achievements and intelligence of students in high school. This chapter also covers the success of the students in high school with low achievement and/or low intelligence. The final chapter is the summary and the conclusions of the study.

CHAPTER II

REVIEW OF THE LITERATURE

A great deal has been written on drop-outs and many drop-out studies have been made. Many of the studies of this sort were found to be local in nature and therefore not of great value in this study other than for procedure and, possibly, comparison of results. In this review, only a brief summary of the work of other experimenters on problems closely related to the one at hand will be given.

Literature on drop-out, achievement and mental maturity. Moore,¹ in a study of elimination in a Negro secondary school, touched on many reasons for drop-out. The portion of his study pertaining to this study was his comparison of scholastic aptitude with elimination. He concluded that low scholastic aptitude was obviously a definite determinant of elimination.

Mack,² made a study covering an entire eastern state on the drop-out situation. In this study he classified all students who left school as dropouts. He gave very little

¹Parlett L. Moore, "Factors Determining Elimination in the Negro Secondary School," National Association of Secondary School Principals Bulletin, 147-148, February, 1949.

²Russell A. Mack, "A Study of Drop-outs," National Association of Secondary School Principals Bulletin, p. 49, February, 1954.

consideration to those who had moved out of town. This could possibly admit a very large error in the number of drop-outs. He made two discoveries: first, that more boys than girls drop out; and, secondly, that the tenth grade in high school had the largest number of drop-outs. Both of these were in agreement with many other studies.

An interesting summation was found in Griffith's study on this problem as follows:³

In short, then, the significant fact about correlations between success or failure in school and relative standing on an intelligence test is not to be found in the similarities which favor high correlation but in the exceptions which keep the correlation from being any higher than it is. These exceptions appear to furnish the real crux of the teaching problem. If students can actually be transferred from one I.Q. or achievement level to another, the reason for the change ought to be discovered.

Johnson and Legg⁴ in their study of the reasons young people leave school, used a questionnaire and conference method of arriving at the reasons why students leave school. The answers received most frequently were "disliked school generally" and "dissatisfied with school." This type of answer is much too vague to get at the basic cause of the situation. The person's ego must be considered in matters such as these. All people cannot be expected to state that the work is merely too hard, thereby admitting to others

³Coleman R. Griffith, Psychology Applied to Teaching and Learning, (New York: Farrar & Rinehart, Inc. Publishers, 1939), p. 617.

⁴Elizabeth S. Johnson and Caroline E. Legg, "Why Young People Leave School," National Association of Secondary School Principals Bulletin, 14-24, November, 1948.

that they are not intelligent. The answer that might be expected would be an evasive one, which was the type of answer received in this study.

Bruce and Bruce,⁵ in their article, attempted to disprove the statement that Intelligence Quotients were one of the main determinants in drop-out. To do this they used a drop-out study made by another group. From this they extracted what they termed their proof. The study findings were that over half of the drop-outs received "C" or better grades in high school. They assumed from this that intelligence quotients were not one of the main determinants of drop-out. There were several fallacies in this thinking. The first was that one study does not give basis enough for an over-all statement. Another was the assumption that grades are a measure of intelligence. This statement may or may not be true. Grading systems vary and therefore their correlation with intelligence might vary.

The study group titled, Work Conference on Life Adjustment Education,⁶ did work on the drop-out situation. This group was made up of educators from large cities in various parts of the country. Their findings gave a good

⁵William G. Bruce and William C. Bruce, "The Problem of Drop-Outs," The American School Board Journal, p. 47, July, 1947.

⁶Work Conference on Life Adjustment Education, Why Do Boys and Girls Drop Out of School, and What Can We Do About It? (Washington, D.C.: Public Office of Education, 1950).

over-all view on the drop-out situation. One of the important things brought out in this conference was the fact that one should not depend too much on the reasons given by drop-outs for leaving school. This conference concluded that there were several reasons for each drop-out. One of these was usually a disinterested teacher. They encouraged teachers to be alert to the drop-out situation and to be sympathetic with the student, to help him overcome the problems that may cause him to drop out of school. This proved to be a very good study and gave a complete picture of the situation; however, it must be remembered that each community probably has unique causes for drop-outs.

CHAPTER III

METHODS OF GATHERING MATERIAL

The locality of this study was the western city of Missoula, Montana. The population of this city was approximately twenty-five thousand people; it was considered to be in the group of the five largest cities in Montana.

Lumbering was the largest industry in this district. Missoula, being a university town, tended to have an oversupply of cheap labor due to the influx of many working students. The chief object in bringing this point to attention is to show that a pupil who dropped grade school and high school would likely have trouble finding employment.

At the time of this study the grade schools were not too crowded, in spite of the increase due to the war time and post war birth rate. Two new grade schools had been built and two more were under construction to meet the ever increasing demand. The average grade school class ranged from twenty-six pupils to thirty-eight pupils. The high school was said to be overcrowded; however, a bond issue had been passed and a new high school was to be provided. Very little practical job training existed in the high school curriculum. Due to this fact, more stress was to be placed upon farm and shop courses in the proposed high school.

The only drop-out studies available in this area were informal and unrecorded studies made by the administrative personnel of the high school. These individuals reported that there was approximately a twelve per cent drop-out of those who entered high school, and the largest drop-out occurred in the sophomore year.

This study, as previously noted, was made of a group of eighth grade graduates. The investigator was interested in knowing what the percentage of drop-out was immediately after the period of compulsory attendance. The School Laws of the State of Montana,¹ indicated that a student must remain in school until he was sixteen or through the eighth grade.

The group chosen for this study was the eighth grade class of 1952-53. When the study was started, the class was half-way through the first year of high school.

At the beginning of this study, three hundred seventy-three students had graduated from the eighth grade in June of 1952. Of this group, twenty-three moved out of town with their families. They were dropped from the study, leaving three hundred fifty. File cards were set up for this group. The students' personal record cards were consulted, and from these the intelligence (Intelligence Quotient) and average achievement of the pupils were obtained.

The Intelligence Quotients were open to some question because in most cases only one mental test had been given.

Laws of the State of Montana, 1953, Section
Tribune Printing and Supply Company,

The test used had been the Otis Quick Scoring.² The average achievement scores were taken from the Stanford Achievement Test,³ which had been given the seventh month of the eighth grade. After these scores were recorded, each student was checked through the high school files to ascertain whether or not he was in high school. The students were then checked in the boys' and girls' Catholic high schools. In this study no differentiation was made between the public and parochial high schools, the main interest being to find out how many students had gone on to high school.

After these pupils were eliminated, the remainder were not considered as drop-outs until each had been checked through his respective principal. There was little chance for error since each of these children was known personally by the principal, and his whereabouts was also known. It was therefore fairly certain that each student considered as a drop-out was still in town but was not going to high school.

²Arthur S. Otis, Otis Quick-Scoring Mental Ability Tests, (New York: World Book Company, 1953).

³Truman L. Kelly, and others, Stanford Achievement Test, (New York: World Book Company, 1953).

CHAPTER IV

RESULTS OF THE INVESTIGATION

Per cent and number of drop-outs. The first task was to find the number and per cent of drop-outs. The method of gathering material was stated in the preceding chapter.

The total number in the eighth grade class under consideration was three hundred seventy-three students. Twenty-three of this group moved out of town with their families and therefore could not be checked as to whether or not they had gone on to high school. These students were dropped entirely from the study.

There were twenty-nine drop-outs among the remaining three hundred and fifty students. This represented a drop-out of 8.3 per cent. This, as was mentioned before, was from graduation from the eighth grade through the first half of the Freshman year of high school.

This group of drop-outs included nineteen boys and ten girls. Figuring the percentage of these drop-outs, 65.5 per cent were boys and 34.5 per cent were girls. This agrees with many studies, such as the one by Mack.¹

¹Russell A. Mack, "A Study of Drop-Outs," National Association of Secondary School Principals Bulletin, p.38:79, February, 1954.

Table I was designed to show the difference in number and per cent of the boy and girl drop-outs. The per cents shown are figured on the total of three hundred and fifty students, and were rounded to the nearest tenth of a per cent.

The comparison of drop-outs to their achievement scores. This portion of the study deals with three categories of students: in high school, entered high school but dropped, and did not enter high school. The scores used in this section of the study were derived from the Stanford Achievement Test;² the score used was the grade equivalent. The national average for this group was 8.7, according to directions for the test.³ To facilitate handling of the scores, they were rounded to the nearest whole grade. The per cent values were rounded to the nearest tenth of a per cent. There were achievement scores for all except one of the students, therefore the per cents were based on the total number of three hundred and forty-nine.

The reason for using the Stanford Achievement Test was merely that this was the test which had been given to the eighth grade. All of the grade schools gave this test at the same time and under very nearly the same conditions.

²Truman L. Kelly, and others, Stanford Achievement Test (New York: World Book Company, 1953).

³Loc. cit.

TABLE I

NUMBER AND PER CENT OF BOYS AND GIRLS OF THE
 MISSOULA EIGHTH GRADE CLASS OF 1953
 WHO DID NOT ENTER HIGH SCHOOL,
 AND WHO ENTERED HIGH
 SCHOOL BUT DROPPED

	Did not enter		Entered but dropped	
	Number	Per cent	Number	Per cent
Boys	7	2	12	3.4
Girls	2	.6	8	2.3
TOTAL	9	2.6	20	5.7

The grade score was used because it was the score which was recorded on the students' personnel form. This also was of little importance, as one kind of score would have worked in the comparison as well as another. Fortunately, however, all the schools in the system used the same test and recording methods.

Table II, page fourteen, shows both the numerical and percentage values involved. The grade equivalent was rounded to the nearest whole grade score. Therefore all scores from 7.5 to 8.4 would be recorded as 8. In this table, the vertical columns are headed by these grade scores; horizontal rows show the three groups of students in the study, each of which is given in number and per cent. Each grade score was figured as a group for the percentage values. These percentage values were rounded to the nearest whole per cent. Following is an example of how to read this table. Under the grade score of six appears a total of nine students. Of this group, six (or 67 per cent) were in high school; two students (or 22 per cent) entered high school but dropped; and one (or 11 per cent) did not enter high school.

Figure 1, page fifteen, gave a visual explanation of the actual values derived from Table II. There is, however, one factor that shows up well on the table, but does not show up on the figure, namely, that two hundred of the three hundred and forty-nine students whose grade scores were listed (or about fifty-seven per cent of the group) had grade scores of tenth grade or above.

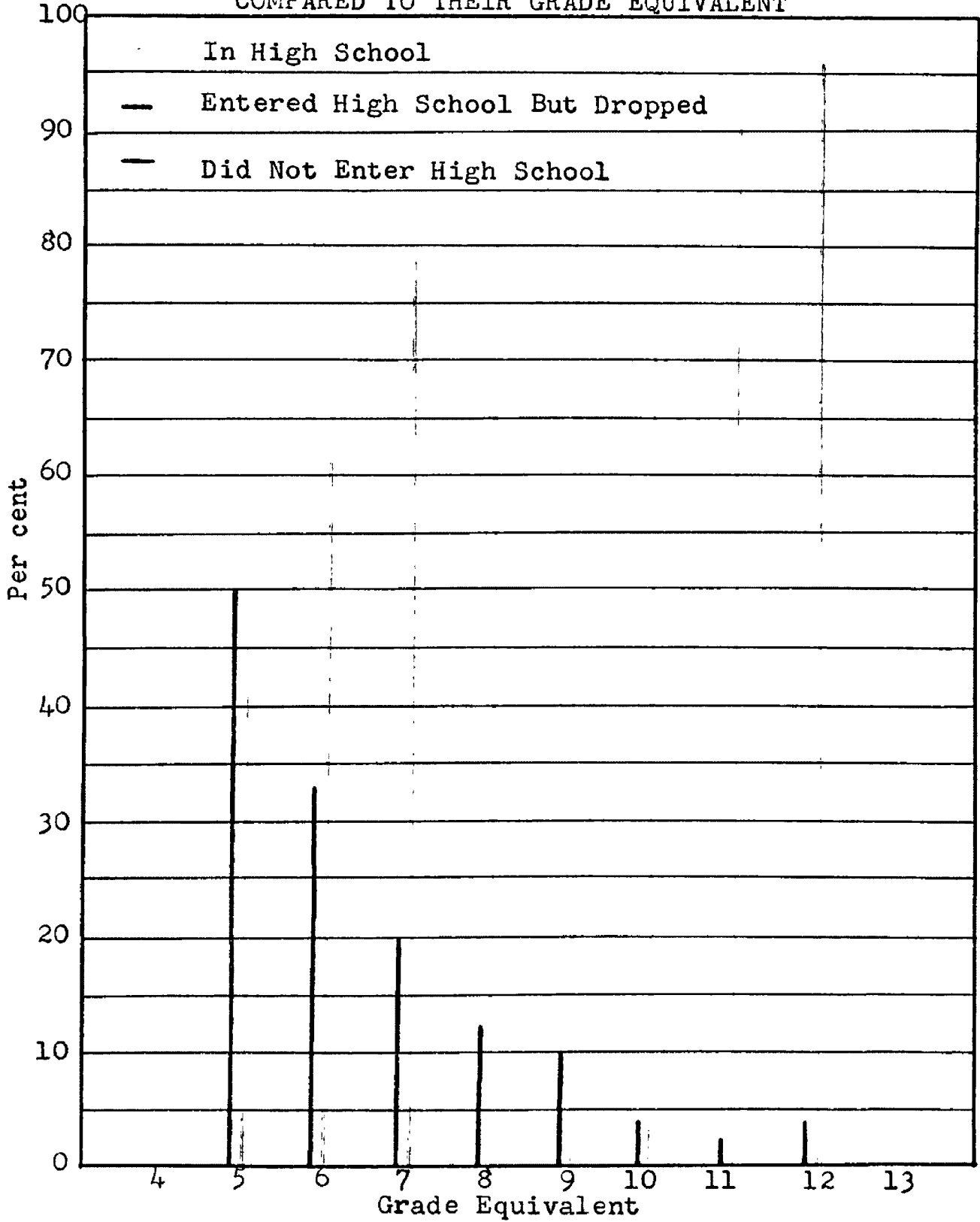
TABLE II

NUMBER AND PER CENT OF MISSOULA EIGHTH GRADE GRADUATES OF 1953 WHO
 ENTERED HIGH SCHOOL, WHO ENTERED HIGH SCHOOL BUT DROPPED,
 AND WHO DID NOT ENTER HIGH SCHOOL COMPARED TO THEIR GRADE EQUIVALENT

Grade Equivalent		5	6	7	8	9	10	11	12
Students in High School	Number of Students	2	6	23	39	57	72	95	27
	Per cent of Students	50	67	79	88	90	96	98	96
Students Entered High School But Dropped	Number of Students	2	2	3	3	3	3	2	1
	Per cent of Students	50	22	10	7	5	4	2	4
Students did not Enter High School	Number of Students	0	1	3	2	3	0	0	0
	Per cent of Students	0	11	10	5	5	0	0	0

FIGURE 1

PER CENT OF STUDENTS WHO ENTERED HIGH SCHOOL, WHO ENTERED HIGH SCHOOL BUT DROPPED, AND WHO DID NOT ENTER HIGH SCHOOL COMPARED TO THEIR GRADE EQUIVALENT



The horizontal axis of Figure 1 shows the rounded grade scores; the vertical axis illustrates the per cent values. The three different groups of the study were shown in different colors, as indicated on the figure. The reason for placing the two groups of drop-outs on top of each other was to allow the reader to see the total drop-out picture and yet to make it possible to separate the drop-outs into the two groups. Figure 1 shows very plainly that as achievement increased, drop-out decreased. It was also interesting to note that those students who did not enter high school had achievement scores of no more than ninth grade level. It must be remembered that in a study of this size the curve will not likely be true as one student may cause too large a variance.

The comparison of drop-outs to their intelligence quotients. In this section of the study, three categories of students -- in high school, entered high school but dropped, and did not enter high school -- were compared by their intelligence quotients. The intelligence quotients used in this section were derived from the Otis Quick-Scoring Test.⁴ The validity of this score, for any one individual, was doubtful as only one test had been given in most cases. It is possible, however, that errors tend to balance out in a group. The comparison was used in spite of

⁴Arthur S. Otis, Ph.D., Otis Quick-Scoring Mental Ability Tests, (New York: World Book Company, 1953).

the possible lack of validity, as it gave one more measure which helped to verify the study.

Attention should be called to the fact that only three hundred and eighteen scores were listed. This was due to the fact that thirty-two of the group had no intelligence scores listed.

Table III, page eighteen, was designed to show the numerical and percentage values involved. In this table the vertical columns were headed by the intelligence quotient scores which were rounded to the nearest ten points. Therefore a score of from 95 to 104 would be shown as 100. The horizontal rows show the three groups of students in the study, each of which is given in number and per cent. Each intelligence quotient score was figured as a group for the percentage values. These percentage values were rounded to the nearest whole per cent. An example of reading this table is as follows. Under the intelligence quotient score of seventy appears a total of seven students. Of this group, three students (or a total of forty-three per cent) were in high school, two students (or twenty-eight per cent) entered high school but dropped, and two students (or twenty-eight per cent) did not enter high school. This table gives the actual values of the study; Figure 2, page nineteen, tends to give a more graphic interpretation of these figures. From the table one might note that sixty per cent of the students in the study had intelligence quotient scores of one hundred and ten or over.

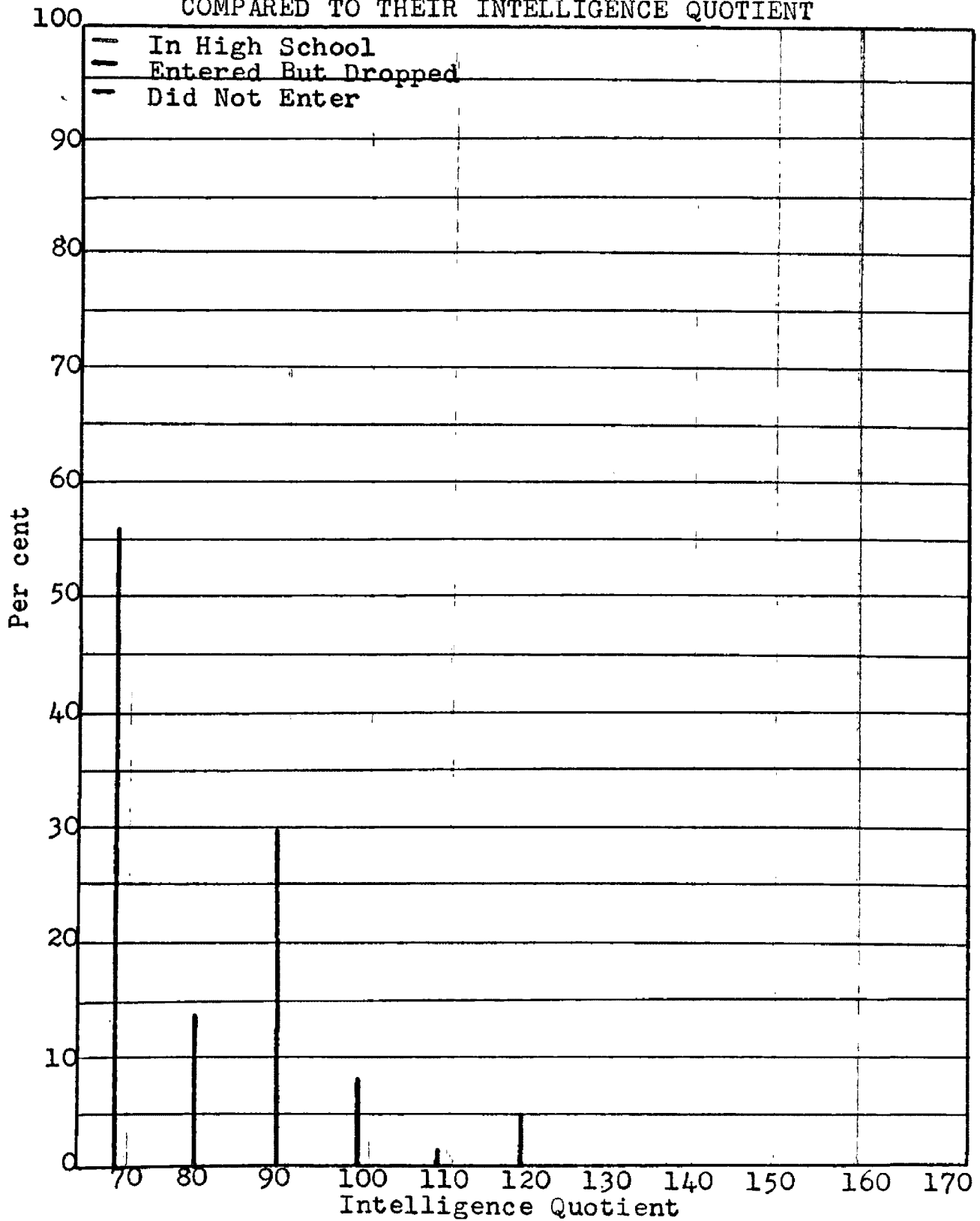
TABLE III

NUMBER AND PER CENT OF MISSOULA EIGHTH GRADE GRADUATES OF 1953 WHO ENTERED HIGH SCHOOL, WHO ENTERED HIGH SCHOOL BUT DROPPED, AND WHO DID NOT ENTER HIGH SCHOOL COMPARED TO THEIR INTELLIGENCE QUOTIENTS

Intelligence Quotient		70	80	90	100	110	120	130	140	150	160
Students in High School	Number of Students	3	12	16	77	89	63	23	8	1	1
	Per cent of Students	43	86	70	92	98	95	100	100	100	100
Students Entered High School But Dropped	Number of Students	2	2	3	6	0	3	0	0	0	0
	Per cent of Students	28	14	13	7	0	5	0	0	0	0
Students did not Enter High School	Number of Students	2	0	4	1	2	0	0	0	0	0
	Per cent of Students	28	0	17	1	2	0	0	0	0	0

FIGURE 2

PER CENT OF STUDENTS WHO ENTERED HIGH SCHOOL, WHO ENTERED HIGH SCHOOL BUT DROPPED, AND WHO DID NOT ENTER HIGH SCHOOL COMPARED TO THEIR INTELLIGENCE QUOTIENT



The horizontal axis of Figure 2 indicates the intelligence quotient scores; the vertical axis, the per cent values. The three different groups of the study are shown in different colors, as indicated in Figure 2. The reason for placing the two groups of drop-outs on top of one another was to allow the reader to see the total drop-out situation and yet to make it possible to separate the drop-outs into the two groups. The largest per cent of the drop-outs, as may be seen in the figure, had intelligence quotient scores of ninety or below. Furthermore, as intelligence quotient scores increased, the per cent of drop-outs decreased. This figure did not coincide very well with Figure 1. This was probably due to the lack of correlation between intelligence quotients and achievement scores.

Success of those students with low intelligence and/or low achievement who were still in high school. These data were secured by consulting the high school files for the first two quarters. From the grades of those students who were still in high school, an average grade was derived. These grades are shown on Table IV, page twenty-one. Approximately, two out of every three students with intelligence quotients below one hundred and/or grade equivalents below seventy received "D" or "E" averages for the first two quarters of high school. No students in this group had an average grade higher than "C". Approximately two-thirds of the students had "D" or lower grades. This disagrees quite

TABLE IV

AVERAGE GRADES FOR FIRST TWO QUARTERS RECEIVED BY
STUDENTS STILL IN HIGH SCHOOL WITH EITHER/OR
BOTH INTELLIGENCE QUOTIENT BELOW ONE HUNDRED
ON OTIS QUICK SCORE TEST AND
ACHIEVEMENT GRADE SCORE ON STANFORD
ACHIEVEMENT TEST OF BELOW SEVENTH GRADE

Grades	A	B	C	D	E*
Boys	0	0	6	12	3
Girls	0	0	7	4	1
TOTAL	0	0	13	16	4

* This grade equivalent to "F" or failing.

definitely with the article by Bruce and Bruce.⁵

The vertical headings, in Table IV, were the average grades and the horizontal column was separated into boy and girl groups to show the interesting fact that the low achievement or low intelligence girls tended to have fewer low grades than did the boys who were low in scholastic aptitude and achievement.

Prediction and the possible prevention of drop-out.

The findings of this study imply that the student with a grade score on the Stanford Achievement Test⁶ of below normal for the grade is more likely to drop out of school than is one whose achievement is above normal. The same thing is true for the student with an intelligence quotient of below one hundred. However, the largest per cent of drop-out at any achievement or intelligence quotient bracket was approximately fifty per cent. This would seem to indicate that in spite of intelligence or achievement a child has a fair chance of continuing in high school. If drop-outs are to be prevented, the problem of the schools is to seek out and encourage low students to continue on in high school. Better guidance measures and curriculum changes are possible answers to the prevention of drop-out.

⁵William G. Bruce and William C. Bruce, "The Problem of Drop-Outs," The American School Board Journal, p. 47, July, 1947.

⁶Truman L. Kelly, and others, op. cit.

CHAPTER V

SUMMARY AND CONCLUSIONS OF THE STUDY

The first purpose of this study was to discover the number and percentage of students of the 1952-53 eighth grade graduating class of School District Number One, Missoula, Montana who dropped out of school before completing the first half of the freshman year in high school. The study was started with three hundred and fifty students. These did not include twenty-three who moved out of town with their families. There were seven boys and two girls who dropped out before entering high school. Twelve boys and eight girls dropped out in the first half of the freshman year of high school. The total of these resulted in twenty-nine drop-outs, or nineteen boys and ten girls. The fact that there were more boy drop-outs than girl drop-outs agrees with other studies made on the subject by investigators such as Mack.¹

The result of the study was a total drop-out of 8.3 per cent. This percentage was divided, then, into two groups: 2.6 per cent dropped out before high school and 5.7 per cent dropped out after entering, during the first half of the freshman year. It is interesting to note that after

¹Russell A. Mack, "A Study of Drop-Outs," National Association of Secondary School Principals Bulletin, 38:49, February, 1954.

legal restrictions were lifted only 2.6 per cent dropped out immediately. It might be said, then, that the rest of the students had intentions of going to high school. The trouble might then be placed in the high school, as 5.7 per cent dropped out shortly after starting.

The second purpose was to examine the achievement of the drop-outs. The findings of this study showed quite clearly that the higher the achievement grade score the lower the drop-out rate.

The comparison of the drop-outs and their intelligence quotients was the third purpose cited in this study. It was shown that as the intelligence quotient score increased the drop-out percentage decreased. There was a very large rate of survival when the score of one hundred was reached.

The fourth purpose of this study was to determine the success in high school of those 1952-53 eighth grade graduate students with low intelligence and/or low grade school achievement. There were no students in this group with an average higher than "C"; the majority of this group had grades of "D" or under.

The final purpose of the study was to attempt to discover ways of predicting and possibly, preventing drop-outs. According to the material in the preceding chapters one could assume that a student with achievement below the national norm and/or intelligence quotient below one hundred would be likely to drop out. So far as preventing drop-outs,

the study indicated that the major portion of work should be carried out in high school, possibly in the line of curriculum changes and guidance work. The evidence for this would be the fact that of the twenty-nine students who dropped out, twenty students dropped out after entering high school.

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