

1931

The comparative validity of mental tests and silent reading tests in predicting high school success

William A. Cowing
University of Massachusetts Amherst

Follow this and additional works at: <https://scholarworks.umass.edu/theses>

Cowing, William A., "The comparative validity of mental tests and silent reading tests in predicting high school success" (1931). *Masters Theses 1911 - February 2014*. 1422.
<https://doi.org/10.7275/6870958>

This thesis is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses 1911 - February 2014 by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

UMASS/AMHERST



312066013549886

The Comparative Validity of Mental Tests and Silent Reading Tests in Predicting High School Success

William A. Cowing



DATE DUE			

UNIV. OF MASSACHUSETTS/AMHERST
LIBRARY

LD
3234
.M268
1931
C874

THE COMPARATIVE VALIDITY OF MENTAL TESTS AND SILENT
READING TESTS IN PREDICTING HIGH SCHOOL SUCCESS

BY

WILLIAM A. COWING. A.B.

THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF SCIENCE IN THE GRADUATE
SCHOOL OF THE MASSACHUSETTS STATE COLLEGE

AMHERST, MASS.

1931

ACKNOWLEDGEMENT

Acknowledgements are due to all of the faculty of the Massachusetts State College with whom I have come in contact as a graduate student and especially to Dr. H. N. Glick under whose direction and supervision this study was carried on.

Table of Contents

Chapter	Page
I. INTRODUCTION	
1. The Problem.....	1
2. Method of Procedure.....	1
II. EARLY HISTORY OF MENTAL TESTS.....	3
III. HISTORY OF SILENT READING TESTS.....	6
1. Prediction.....	8
2. Prediction of Success in Specific Subjects.....	9
3. Intelligence Tests vs. Achievement Tests.....	10
IV. STATISTICAL INTERPRETATION	
1. Coefficient of Correlation Method...	13
2. Quartile Placement Method.....	13
3. Table II (Correlations Among the Tests Used in this Study).....	16
4. Table III (Correlation Between Each Test and Position (Rank).....	16+18
5. Table IV	
1. Other Studies.....	19
6. Table V Grade 9	
1. Number of Pupils in Each Quartile and Rank Obtained..	21-22
7. Table VI Grade 9	
1. Shows Percent of Different Ranks Received by Pupils in each Quartile.....	23-24

8. Table VII Grade 10	
1. Number of Pupils in each Quartile and Rank Obtained.....	25-26
9. Table VIII Grade 10	
1. Shows Percent of Different Ranks Received by Pupils in each Quartile.....	27-28
10. Table IX Grade 11	
1. Number of Pupils in each Quartile and Rank Obtained.....	29-30
11. Table X Grade 11	
1. Shows Percent of Different Ranks Received by Pupils in each Quartile.....	31-32
12. Table XI Grade 12	
1. Number of Pupils in each Quartile and Rank Obtained.....	33-34
13. Table XII Grade 12	
1. Shows Percent of Different Ranks Received by Pupils in each Quartile.....	35-36
14. Table XIII to XXVIII	
1. Quartile Placements.....	39-54
V. SUMMARY AND CONCLUSIONS.....	57
APPENDIX.....	69
BIBLIOGRAPHY.....	

CHAPTER I

INTRODUCTION.

The Problem.

The purpose of this study was to ascertain whether or not silent reading tests would furnish as valid a basis of judgment as mental tests, (so-called intelligence tests) in determining the ability of children to do high school work.

Method of Procedure.

1. In May, 1926, a class of one hundred and twenty students in the ninth grade of the West Springfield Junior High School was selected for the study. The plan was to give a battery of mental tests and to compare the results of these tests with teachers' marks which are supposed to indicate achievement. The comparison was made each year for three years. This study really represents a period of four years for although the tests were given in the Spring of 1926, the marks for 1925 and 1926 were used in the study.

2. A battery of mental tests (Terman Group Test of Mental Ability, Form A and B) was given. Following these the Monroe Silent Reading and the Chapman Silent Reading Tests were given.

3. Correlations:

- (a) Terman A was correlated with Terman B.
- (b) Chapman Silent Reading was correlated with Monroe Silent Reading.
- (c) Terman A was correlated with Chapman Silent Reading.
- (d) Terman A was correlated with Monroe Silent Reading.
- (e) Terman B was correlated with Chapman Silent Reading.
- (f) Terman B was correlated with Monroe Silent Reading.
- (g) Each year the marks were averaged and the standing of the pupil in the class determined.
- (h) Each year a correlation between the position in the class and the score in each test was made.
- (i) Each test was thrown into quartiles and compared with the quartile position in the class. This was done for each year.
- (j) In the use of the Terman tests the I.Q. instead of the score was used.

CHAPTER II

EARLY HISTORY OF MENTAL TESTS.

For twenty years before Binet issued his provisional scale in 1905, psychologists had experimented with intelligence tests; in fact, a great deal of ingenuity was spent in devising tests which when used gave no meaningful interpretation to the responses.

Binet utilized the idea of age norms in establishing the measurement of intelligence. The tests used ranged from very easy to very difficult and when these were tried on children of different ages and the percentages of successes in the various years noted, it was possible to locate them in at least approximately the years where they belonged.

The terms "bright"--"very bright"--"dull" and "very dull" may really mean something now, because they need no longer be expressions of subjective judgment, but may be statements of considerable accuracy if one will take the evidence of a battery of mental tests.

Binet's first contribution to mental measurement was 30 tests arranged roughly in order of dif-

ficulty; but relying upon data collected from these tests, Binet in 1908, gave to the world a relatively complete age-grade scale. This discovery is thought by some to rank, at least from the practical point of view, as the most important in all the history of psychology.

The Binet tests differed from the earlier tests in that they were designed to test the higher and more complex mental processes instead of the simple and elementary ones, and psychologists generally admit that higher intelligence is little concerned with elementary processes. Many of the animals have keen sensory discrimination and Binet found that feeble-minded children, unless of very low grade, differed very little from normal children in sensitivity of the skin, visual acuity, reaction time, etc. But in power of comprehension, abstraction, ability to direct thought, in the nature of the associative process, in the amount of information possessed, in the spontaneity of attention, they differ tremendously.

Mental tests were not in general use before 1917. In that year the army needed tests for the purpose of classifying the soldiers; individual tests such as the Binet-Simon could not possibly be administered to

the men in the army; so group tests had to be produced to meet the emergency. Educational tests had probably suggested this procedure. Some had used the Binet-Simon test in group testing. Arthur S. Otis seems to have been the pioneer in this work. Four of the ten tests in the original Army scale for Group Testing were taken from the Otis Scale without change¹.

The group test is much easier to administer, saves much time, and many of them have dependable validity. The following are some of the group tests now in general use in high schools.

Haggerty, Intelligence Examination, Delta 2

Army Alpha

Miller Mental Ability Test

Terman A and B Group Tests

Otis Group Intelligence

1. Monroe, DeVoss and Kelley, "Educational Tests and Measurements", Page 352.

CHAPTER III

HISTORY OF SILENT READING TESTS

Silent reading tests have been developed and brought into use during the last half century. They are designed to measure rate and comprehension in reading, and some include vocabulary and grammar work.

The 1917 report of the National Joint Committee on English sets forth among the aims of an English course the following kinds of reading ability:

(1) Cursory reading to cover a great deal of ground, getting quickly at essentials.

(2) Careful reading to master a book, with exact understanding of its meaning and implications.

(3) Consultation, to trace quickly and accurately a particular fact by means of indexes, guides and reference books.

The first two types should be mastered before high school. Standard tests have concentrated upon comprehension.

The Chapman Unspeeded Reading Comprehension Test, published in 1925, tests comprehension and may be used in grades from five to twelve. This test has a reliability of .89¹. The Haggerty Reading Examination,

¹•Ruch and Stoddard, Tests and Measurements in High School Instruction, page 234.

Sigma 3, is designed to measure achievement and to aid in classifying pupils. This test consists of three parts--vocabulary, sentences, and paragraph drill.

The Thorndike-McCall Reading Scale is clearly a measure of power and reading comprehension and not of reading rate. Gates¹ points out that it is "probably the only test measuring a certain type of power in comprehension, unaffected by the mechanical factors of reading."

The Thorndike-McCall Reading Test is not regarded as reliable as some of the later tests, when the question of diagnostic power is under discussion. These tests do, however, enable the teacher to locate the "capable, but slow" pupil in reading, and to place him approximately in the proper grade. The reliability of this test is .75. The Monroe Silent Reading Test measures ability to read paragraphs common to the range of high school pupils, and to draw the essential meaning from these paragraphs. The chief deficiency of the test is its brevity². The reliability is .76.

It seems to me that a person who comprehends

¹. Gates, A.I., Experimental and Statistical Study of Reading and Reading Tests. Journal of Educational Psychology, Vol. XII (Sept. 1921), pages 303-341.

². Ruch and Stoddard, Tests and Measurements in High School Instruction, pages 117-120.

what he reads must have a good vocabulary and a good imagination; he must reason, he must associate. In short he must possess intelligence.

Table I comprises a study made by several different men and the results seem to agree rather closely with the study I have made, and while the correlations are not high, I feel they would be much higher if each pupil worked up to his ability and if the teachers actually measured the achievement actually made. Furthermore this study has led me to believe that it is lack of effort alone that prevents a very high correlation.

Some may claim that poor methods of study or bad habits interfere with success. This is probably true to a certain extent, but I feel that effort is of greater importance than method.

Prediction: "Prediction of general academic success in first-year college work has been mostly attempted through intelligence test scores. The correlations usually run from .30 to .60, the latter having been reached at Columbia University by means of the three parts of the Thorndike Intelligence Examination."¹

¹. See Tests and Measurements in High School Instruction: Ruch and Stoddard, page 207.

"Similarly, an average correlation of .60 between test scores and first year grades is obtained at Iowa by combining the Iowa High School Content Examination (short Form), the Iowa Comprehension Test, and the two English examinations of the placement series in a single battery."¹ "A composite number of Iowa Placement Examinations has proved effective as a basis of such predictions."²

Prediction of success in specific subjects in college. The Iowa Placement Examinations were given near the end of the high school course or the first week in college and seems to predict what degree of success a student is likely to attain. This is regarded as an important service, for the students deficiency is not always general, and certain weaknesses may be bolstered up by special treatment. A great number of correlations have been made and the central tendency is given in the following table:

The important thing to be noted in this study is that the correlation of the tests scores with the English mark is surpassed only by the correlation with

1. See Wood, Ben D., Measurement in Higher Education, World Book Company, 1923, page 334.

2. See Stoddard, George D., "Iowa Placement Examination" University of Iowa Studies in Education, Vol. III No. 2 (August 15, 1925), page 103.

TABLE I (1)

Correlations between Iowa Placement Examination Scores and Corresponding First-Semester Grades. In a Specific Subject (Approximate Central Tendency.)

Subject	Series I 40 minutes	Series II 80 minutes
Chemistry	.50	.60
English	.55	.60
French	.60	.65
Mathematics	.55	.60
Physics	.50	.55

the French mark in either the first or second series. From this it would appear that knowledge of English is a good evidence that one has a fair amount of intelligence and will be likely to go on and do well in further study.

INTELLIGENCE TESTS VS. ACHIEVEMENT TESTS.

"The difference between intelligence tests and achievement tests is that the achievement tests attempt to measure the products or results of training, while intelligence tests attempt to measure the original or innate capacity of the pupil to acquire knowledge and

(1) Ruch and Stoddard, Tests and Measurements in High School Instruction, page 208.

to do. Each measure is dependent upon the other and neither is a pure measure as desirable as it would be to have it so. Nevertheless it is not true that intelligence tests are a pure measure of capacity uninfluenced by training. The statement that schooling does not influence innate capacity may be entirely true. Nevertheless the statement that schooling has no influence on scores made by school pupils on a group intelligence test is false.

The correlation between intelligence scores and achievement scores has not always been as high as might be expected. This is due to various factors.

1. Often neither the measure of achievement nor the measure of intelligence is highly reliable. If the true reliability coefficient of an intelligence test is only 90 and the true coefficient of reliability of an achievement test is only 90, the highest correlation between the two will probably not be over 81.

2. The measure of achievement in many cases is not complete. The writers have found on careful testing with 150 cases a correlation of $83 \pm .0178$ between achievement in school work as measured by the Stanford Achievement Test and intelligence as measured by the Otis Self Administering Intelligence Test. They have also

found a correlation of $81 \pm .024$ between the same intelligence test and the Indiana Composite Achievement Test which includes nine school subjects. The average correlation between school work on one subject and intelligence tests scores is, however, usually not much above 60."¹

3. Although intelligence tests may accurately measure capacity to do work, they certainly do not measure the will to do work.

Achievement in literature has been found to present a very difficult problem of measurement. This perhaps explains the reason why so few standardized tests have been constructed. Van Wageningen has constructed a test for comprehension.

Abbott and Trabue have devised a scale by which poetry is judged. The scale consists of thirteen exercises each of which contains four versions of a short poem. The pupil selects the version he likes best and also the one he likes least. The test has been found to have a reliability of .40 for high school students.²

¹. See Smith and Wright, Tests and Measurements, pages 442-4.

². Monroe, Devoss and Kelley, Educational Tests and Measurements, page 265.

CHAPTER IV

STATISTICAL INTERPRETATION

After the data had been collected it was necessary to evaluate the significant factors. Two statistical methods were used in order that one might act as a check on the other. The methods were:

1. Coefficient of correlation
2. Quartile placement

The Coefficient of Correlation Method . The Pearsonian method is used in computing the coefficients of correlation. The formula and technique are taken from Walter S. Monroe.¹ The chief operations of the method are illustrated in Figure 1.

How high r has to be before it is significant is explained in the following quotation from H. O. Rugg.² "When r is below .15 or .20 the correlation is negligible. It is present but low when r ranges from .15 to .20 to .35 to .40. It is marked when r ranges from .35 to .50 and is high when r is above .60 or .70"

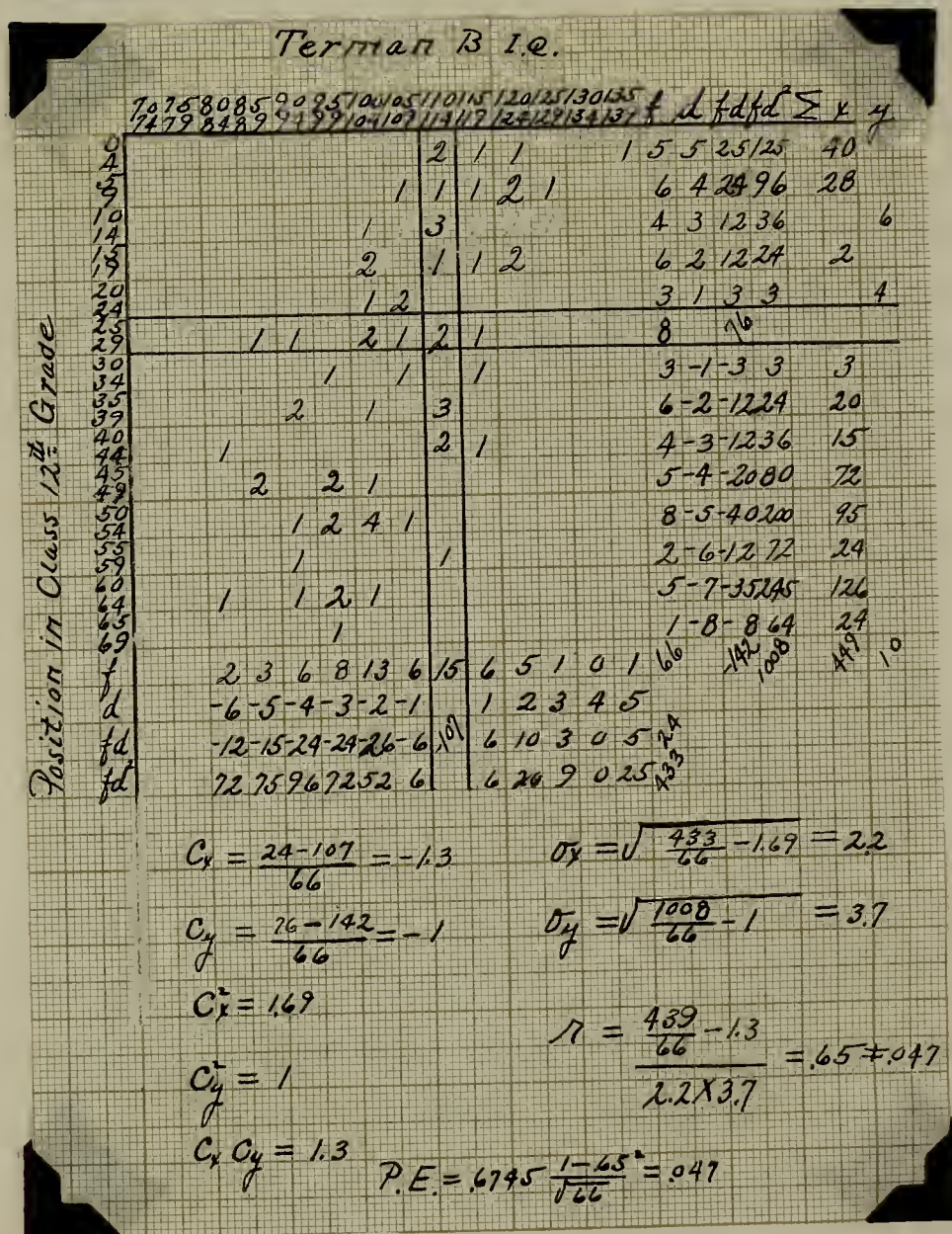
Quartile Placement Method. Students are

¹ Monroe, Walter W., Theory of Educational Measurements,

² Rugg, H. O., Statistical Methods Applied to Education, pages 256-257.

Figure 1

Method of finding coefficient of correlation illustrated.



arranged in quartiles according to their scores or ranks in the functions to be compared, and the percentage of perfect correspondence and the total points misplacement are determined. Perfect correspondence is determined by the number of individuals falling within the same quartile in both functions. The points of misplacement are determined (1) by the number of misplacements, and (2) by the amount of misplacement. One individual changing one quartile equals one point of misplacement. Quartile number one is composed of the poorest students.

Table II shows the coefficient of correlation between the test scores as made by the pupils.

In Table III are shown the correlations between the scores made in the two reading tests and the I.Q. in the two mental tests and the positions in each grade. The correlations compare very favorably with studies made by Haggerty, Proctor, Miller, and Terman, as shown in Table IV, with the exception of the correlation between the Monroe Silent Reading Tests and the positions in the IX, X, and XI grades, where the correlation is low.

It would seem that one might predict fairly

TABLE II

Correlations among the Tests Used in this Study

Terman A	I.Q. with Terman B	I.Q.	.83	$\pm .011$
Terman A	I.Q. with Monroe	Silent Reading Score	.64	$\pm .024$
Terman A	I.Q. with Chapman	Silent Reading Score	.50	$\pm .046$
Chapman	Silent Reading with Monroe	Silent Reading Score	.54	$\pm .047$
Terman B	I.Q. with Monroe	Silent Reading Score	.58	$\pm .04$
Terman B	I.Q. with Chapman	Silent Reading Score	.77	$\pm .025$

TABLE III

Correlation between Each Test and Position (Rank) in Class			
Chapman Silent Reading with position	Grade	No. Cases	r.
Chapman Silent Reading with position	IX	111	.47 \pm .05
Chapman Silent Reading with position	X	86	.38 \pm .06
Chapman Silent Reading with position	XI	70	.59 \pm .052
Chapman Silent Reading with position	XII	66	.50 \pm .062
	Av. r.	.485	
Monroe Silent Reading with position	IX	111	.24 \pm .06
Monroe Silent Reading with position	X	86	.25 \pm .06
Monroe Silent Reading with position	XI	70	.24 \pm .076
Monroe Silent Reading with position	XII	66	.60 \pm .052
	Av. r.	.33	

TABLE III (continued)

Terman A I.Q. with position	Grade	No. Cases	r.
Terman A I.Q. with position	IX	111	.55 ±.044
Terman A I.Q. with position	X	86	.39 ±.06
Terman A I.Q. with position	XI	70	.49 ±.06
Terman A I.Q. with position	XII	66	.62 ±.05
	Av. R.	.51	
Composite scores of Terman A I.Q. and Silent Reading			
	XII	66	.64
Terman B I.Q. with position	IX	111	.55 ±.045
Terman B I.Q. with position	X	86	.47 ±.056
Terman B I.Q. with position	XI	70	.44 ±.064
Terman B I.Q. with position	XII	66	.65 ±.047
	Av. R.	.527	

TABLE IV

Results of studies made by Haggerty, Proctor, Miller and Terman.
The tests used were mental tests (intelligence tests) and the purpose
was for prediction in regard to success in academic work.

Name of Test	r	No. of Cases	Range	Source
Haggerty, Delta 2	.56	55	IX	Haggerty
Army Alpha	.34	495	IX-XII	Proctor
Army Alpha	.41	480	IX-XII	Proctor
Miller	.56	55	IX	Miller
Haggerty, Delta 2	.50	55	IX	Miller
Terman A	.59	55	IX	Miller
Army Alpha 8	.56	55	IX	Miller
Stanford-Binet I.Q.	.45	111	IX-XII	Terman

accurately what a student ought to do, which is a valuable starting point, but not so accurately what he will do. This is explained by the fact that in some cases where two students have the same ability the desire to achieve will be less in one than in the other. The personal equation is a factor that has always to be considered.

In Tables V, VI, VII, VIII, IX, X, XI and XII are the number and percentage of those who made scores in the different quartiles who received F, C-, C+, B-, B+ and A. (In the marking system F is failure, 70 is the passing mark, C- 70-74; C+ 75-79; B- 80-84; B+ 85-89; A above 90).

From a study of these marks it seems as though any student who makes a score which is near the point dividing the first and second quartile scores (e.g. 16.47 in the Chapman Test and 91.8 in the Terman A test marks this point,) should be able to obtain at least a C- grade.

Our teachers agree that in every case where the subjects have been wisely chosen the failure was occasioned by lack of effort. A study of the 12th grade correlations and quartile arrangements seem to

TABLE V Grade 9

This table shows the marks each quartile group received, i.e., of the group in the lowest quartile of the Chapman Silent Reading Test, 10 failed, 11 received C-, 7 received C+ and 1 B+.

Chapman Silent Reading	F	C-	C+	B-	B+	A	Total
1st Quartile (Below 16.47)	10	11	7		1		29
2nd Quartile (16.47 to 19.9)	2	9	8	5	3		27
3rd Quartile (19.9 to 23.3)	3	12	7	8	8	1	39
4th Quartile (Above 23.3)	<u>1</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>3</u>	<u>4</u>	<u>16</u>
	16	34	25	16	15	5	111

Monroe Silent Reading							
1st Quartile (Below 12.9)	4	9	3	3	4		23
2nd Quartile (12.9 to 16.5)	7	14	10	5	3	1	40
3rd Quartile (16.5 to 18.9)	3	6	5	3	5		22
4th Quartile (Above 18.9)	<u>2</u>	<u>5</u>	<u>7</u>	<u>5</u>	<u>3</u>	<u>4</u>	<u>26</u>
	16	34	25	16	15	5	111

TABLE V (continued)

Terman A I.Q.		F	C-	C+	B-	B+	A	Total
1st Quartile (Below 91.87)		7	13	6	1	2		29
2nd Quartile (91.87 to 99.2)		5	10	7	4	3		29
3rd Quartile (99.2 to 111.5)		4	5	7	6	4	1	27
4th Quartile (Above 111.5)		—	<u>6</u>	<u>5</u>	<u>5</u>	<u>6</u>	<u>4</u>	<u>26</u>
		16	34	25	16	15	5	111
Terman B I.Q.								
1st Quartile (Below 91.75)		9	13	4				26
2nd Quartile (91.75 to 100.8)		2	9	8	3	4		26
3rd Quartile (100.8 to 112.5)		5	9	11	7	5	1	37
4th Quartile (Above 112.5)		—	<u>4</u>	<u>2</u>	<u>6</u>	<u>6</u>	<u>4</u>	<u>22</u>
		16	34	25	16	15	5	111

TABLE VI

Grade 9

In this table is shown the per cent of the students in each quartile that received F, C-, C+, B-, B+, and A. E.g., in the first or lowest quartile of the Chapman test 34% received F or failure, 38% received C-, 24% received C+, and 3% received B+. In short a pupil in the lowest quartile would have 34 chances out of a hundred of failing; 38 chances of getting C-; 24 chances of getting C+ and 3 chances of getting B+.

Chapman Silent Reading	F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile (Below 16.47)	34	38	24		3	
2nd Quartile (16.47 to 19.9)	7	30	30	19	11	
3rd Quartile (19.9 to 23.3)	8	30	17	22	20	3
4th Quartile (Above 23.3)	6	12	19	19	19	3
Monroe Silent Reading						
1st Quartile (Below 12.9)	17	40	13	13	17	
2nd Quartile (12.9 to 16.5)	17	35	25	13	7	3
3rd Quartile (16.5 to 18.9)	14	27	22	14	22	
4th Quartile (Above 18.9)	7	19	27	19	11	15

TABLE VI (continued)

Terman A I.Q.		F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile	(Below 91.87)	24	45	21	3	8	
2nd Quartile	(91.87 to 99.2)	17	34	24	13	10	
3rd Quartile	(99.2 to 111.5)	15	18	25	22	15	4
4th Quartile	(Above 111.5)		23	19	19	23	15
Terman B I.Q.							
1st Quartile	(Below 91.75)	35	50	15			
2nd Quartile	(91.75 to 100.8)	8	34	30	11	15	
3rd Quartile	(100.8 to 112.5)	13	21	30	19	15	3
4th Quartile	(Above 112.5)		17	9	27	27	18

TABLE VII

Grade 10

This table shows the number of pupils in each quartile who received F, C-, C+, B-, B+, and A. E.g., in the lowest quartile of the Chapman Test 7 received F or failed; 5 received C-; 8 received C+; and 3 received B-.

Chapman Silent Reading	F	C-	C+	B-	B+	A	Total
1st Quartile (Below 16.47)	7	5	8	3			23
2nd Quartile (16.47 to 19.9)	5	2	5	4	1		17
3rd Quartile (19.9 to 23.3)	7	7	9	5	6		34
4th Quartile (Above 23.3)	—	<u>1</u>	<u>5</u>	<u>2</u>	<u>2</u>	<u>2</u>	<u>12</u>
	19	15	27	14	9	2	86
Monroe Silent Reading							
1st Quartile (Below 12.9)	7	1	4	4			16
2nd Quartile (12.9 to 16.5)	8	7	10	4	3		32
3rd Quartile (16.5 to 18.9)	3	5	5	4	2		19
4th Quartile (Above 18.9)	<u>1</u>	<u>2</u>	<u>8</u>	<u>2</u>	<u>4</u>	<u>2</u>	<u>19</u>
	19	15	27	14	9	2	86

TABLE VII
(continued)

Terman A I.Q.		F	C-	C+	B-	B+	A	Total
1st Quartile	(Below 91.8)	7	2	7	4	1		21
2nd Quartile	(91.8 to 99.2)	7	7	2	2			18
3rd Quartile	(99.2 to 111.5)	4	3	11	5	3		26
4th Quartile	(Above 111.5)	<u>1</u>	<u>3</u>	<u>7</u>	<u>3</u>	<u>5</u>	<u>2</u>	<u>21</u>
		19	15	27	14	9	2	86

Terman B I.Q.		F	C-	C+	B-	B+	A	Total
1st Quartile	(Below 91.75)	8	3	4	2			17
2nd Quartile	(91.75 to 100.8)	5	4	4	5			18
3rd Quartile	(100.8 to 112)	6	7	12	5	4		34
4th Quartile	(Above 112.5)	<u>—</u>	<u>1</u>	<u>7</u>	<u>2</u>	<u>5</u>	<u>2</u>	<u>17</u>
		19	15	27	14	9	2	86

TABLE VIII Grade 10

In this table is shown the percent of the number of pupils in Quartile that received F, C-, C+, B-, B+ and A. E.g., in the first or lowest quartile of the Monroe Silent Reading Test 43% failed; 6% received C-; 25% received C+; 25% received B-; or we might say that a pupil in the lowest quartile had 43 chances out of a hundred of failing; 6 of getting C-; 25 of getting C+; and 25 of getting B-.

Chapman Silent Reading	F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile (Below 16.47)	30	21	34	13		
2nd Quartile (16.47 to 19.9)	29	12	29	23		
3rd Quartile (19.9 to 23.3)	20	20	26	15	17	
4th Quartile (Above 23.3)		8	41	17	17	17
Monroe Silent Reading						
1st Quartile (Below 12.9)	43	6	25	25		
2nd Quartile (12.9 to 16.5)	25	22	31	12	9	
3rd Quartile (16.5 to 18.9)	16	26	26	21	10	
4th Quartile (Above 18.9)	5	10	41	10	21	10

TABLE VIII (continued)

Terman A I.Q.		F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile (Below 91.8)		33	9	33	18	5	
2nd Quartile (91.8 to 99.2)		39	39	11	11		
3rd Quartile (99.2 to 111.5)		15	11	49	19	11	
4th Quartile (Above 111.5)		5	14	33	14	26	9
Terman B I.Q.							
1st Quartile (Below 91.75)		46	17	23	12		
2nd Quartile (91.75 to 100.8)		28	22	22	28		
3rd Quartile (100.8 to 112)		17	20	35	15	12	
4th Quartile (Above 112.5)			6	41	12	29	12

TABLE IX Grade 11

This table shows the number of pupils in each quartile who received F or Failure, C-, C+, B-, B+, E.g., in the lowest quartile of the Chapman Test 5 failed; 9 received C-; and 1 received B-.

Chapman Silent Reading		F	C-	C+	B-	B+	A	Total
1st Quartile	(Below 16.47)	5	9		1			15
2nd Quartile	(16.47 to 19.9)	3	2	6	2	1		14
3rd Quartile	(19.9 to 23.3)	5	7	10	7			29
4th Quartile	(Above 23.3)	—	2	5	1	2	2	12
		13	20	21	11	3	2	70
Monroe Silent Reading								
1st Quartile	(Below 12.9)	5	5		3			13
2nd Quartile	(12.9 to 16.5)	4	5	8	2	3		22
3rd Quartile	(16.5 to 18.9)	4	5	8	2			19
4th Quartile	(Above 18.9)	—	5	5	4	—	2	16
		13	20	21	11	3	2	70

TABLE IX (continued)

Terman A I.Q.		F	C-	C+	B-	B+	A	Total
1st Quartile	(Below 91.8)	4	2	4	2	1		13
2nd Quartile	(91.8 to 99.2)	6	7	3	1			17
3rd Quartile	(99.2 to 111.5)	2	7	7	4	1		21
4th Quartile	(Above 111.5)	<u>1</u>	<u>4</u>	<u>7</u>	<u>4</u>	<u>1</u>	<u>2</u>	<u>19</u>
		13	20	21	11	3	2	70
Terman B I.Q.								
1st Quartile	(Below 91.7)	3	2	4				9
2nd Quartile	(91.7 to 100.8)	5	5	3	3			16
3rd Quartile	(100.8 to 112.)	5	10	10	5	1		31
4th Quartile	(Above 112.)	<u>—</u>	<u>3</u>	<u>4</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>14</u>
		13	20	21	11	3	2	70

TABLE X Grade 11

This table shows the percent of pupils in each quartile who received F, C-, C+, B-, B+. In this table is also indicated the chances of success each pupil has. E.g., in the lowest quartile of the Chapman Test, a pupil has 33 chances out of a hundred of failure; 59 chances out of a hundred of getting C-; and 7 chances out of a hundred of getting B-.

Chapman Silent Reading	F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile (Below 16.47)	33	59		7		
2nd Quartile (16.47 to 19.9)	21	14	43	14	7	
3rd Quartile (19.9 to 23.3)	17	24	34	24		
4th Quartile (Above 23.3)		17	41	8	17	17
Monroe Silent Reading						
1st Quartile (Below 12.9)	38	38		23		
2nd Quartile (12.9 to 16.5)	18	22	38	9	13	
3rd Quartile (16.5 to 18.9)	21	26	42	10		
4th Quartile (Above 18.9)		31	31	25		12

TABLE X (continued)

Terman A I.Q.		F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile	(Below 91.8)	31	15	31	15	8	
2nd Quartile	(91.8 to 99.2)						
3rd Quartile	(99.2 to 111.5)	12	41	41	24		
4th Quartile	(Above 111.5)	5	21	36	21	5	10
Terman B I.Q.							
1st Quartile	(Below 91.7)	33	22	44			
2nd Quartile	(91.7 to 100.8)	31	31	19	19		
3rd Quartile	(100.8 to 112.)	16	32	32	16	3	
4th Quartile	(Above 112.)		21	28	21	14	14

TABLE XI Grade 12

In this table is shown the number of pupils in each quartile who received F, C-, C+, B-, B+ and A. E.g., in the lowest quartile of the Chapman Test 5 failed; 4 received C-; 4 received C+; and 1 received B+

Chapman Silent Reading	F	C-	C+	B-	B+	A	Total
1st Quartile (Below 16.47)	5	4	4		1		14
2nd Quartile (16.47 to 19.9)	2	2	5	3			12
3rd Quartile (19.9 to 23.3)	1	10	7	8	2		29
4th Quartile (Above 23.3)	—	<u>1</u>	<u>4</u>	<u>2</u>	<u>4</u>	<u>1</u>	<u>11</u>
	8	17	20	13	7	1	66
Monroe Silent Reading							
1st Quartile (Below 12.9)	5	5	2				12
2nd Quartile (12.9 to 16.5)	3	7	5	4	1		20
3rd Quartile (16.5 to 18.9)		3	8	7	1		19
4th Quartile (A 18.9)	—	<u>2</u>	<u>5</u>	<u>2</u>	<u>5</u>	<u>1</u>	<u>15</u>
	8	17	20	13	7	1	66

TABLE XI (continued)

Terman A I.Q.	F	C-	C+	B-	B+	A	Total
1st Quartile (Below 91.8)	3	3	5				11
2nd Quartile (91.8 to 99.2)	4	8	3				15
3rd Quartile (99.2 to 111.2)	1	4	8	5	3		21
4th Quartile (Above 111.2)	—	<u>2</u>	<u>4</u>	<u>8</u>	<u>4</u>	<u>1</u>	<u>19</u>
	8	17	20	13	7	1	66
Terman B I.Q.							
1st Quartile (Below 91.7)	1	4	2				7
2nd Quartile (91.7 to 100.8)	5	5	4				14
3rd Quartile (100.8 to 112.)	2	7	12	8	2		31
4th Quartile (Above 112.)	—	<u>1</u>	<u>2</u>	<u>5</u>	<u>5</u>	<u>1</u>	<u>14</u>
	8	17	20	13	7	1	66

TABLE XII Grade 12

In this table is shown the percent of pupils in each quartile who received F, C-, C+, B-, B+. E.g., in the lowest quartile of the Chapman Test 36% failed; 28% received C-; 28% received C+ and 7% received B+. A pupil in this quartile has 36 chances out of a hundred of failing; 28 chances out of a hundred of getting C-; and 7 chances out of a hundred of getting B+.

Chapman Silent Reading	F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile (Below 16.47)	36	28	28		7	
2nd Quartile (16.47 to 19.9)	17	17	41	25		
3rd Quartile (19.9 to 23.3)	3	34	24	27	7	3
4th Quartile (Above 23.3)		9	36	18	36	
Monroe Silent Reading						
1st Quartile (Below 12.9)	42	42	16			
2nd Quartile (12.9 to 16.5)	15	35	25	20	5	
3rd Quartile (16.5 to 18.9)		16	41	36	5	
4th Quartile (Above 18.9)		13	33	13	33	7

TABLE XII (continued)

Terman A I.Q.		F %	C- %	C+ %	B- %	B+ %	A %
1st Quartile	(Below 91.8)	27	27	46			
2nd Quartile	(91.8 to 99.2)	26	53	20			
3rd Quartile	(99.2 to 111.2)	5	19	38	24	14	.
4th Quartile	(Above 111.2)		10	21	42	21	5
Terman B I.Q.							
1st Quartile	(Below 91.7)	14	57	28			
2nd Quartile	(91.7 to 100.8)	35	35	28			
3rd Quartile	(100.8 to 112.)	6	22	38	26	6	
4th Quartile	(Above 11.2)		7	14	35	35	7

bear out this contention; because of the fact that the loafers for the most part have been eliminated. Again it seems fair to expect a student to get B- and C when his scores in the tests place him above the second quartile and the A's and B's should show up when the scores in the tests place a pupil in the third and fourth quartile.

In regard to the validity of the tests, when we have considered all of the factors that might lead us astray, it would seem that a good reading test such as the Chapman should be as valid as a mental test. It may be noted that the average coefficient of correlation between the Chapman Silent-Reading score and the position in class for the four year period is only 2.5 points lower than the coefficient of correlation between the Terman A I.Q. and the position in the class for the same period, and 4.2 points lower than the coefficient of correlation between the Terman B I.Q. and the position in class. The average coefficient of correlation for four years between the Monroe Silent-Reading Test scores and position in class is 18 and 19.7 points lower than that of Terman A and B. The average coefficient of correlation between the two silent-reading tests and marks when compared with the average coefficient of

correlation between the mental tests and marks gives the advantage to the mental tests; but the Chapman test shows to much better advantage when considered by itself.

The correlations shown in Tables II and III in the case of the two Silent Reading Tests were obtained by using the test scores and the I.Q.'s in the mental tests with the position in the class as determined by the marks, e.g., a mark of 80 gave the pupil 29th position in the 9th grade; in the 10th grade, a mark of 81 gave a pupil 10th position, and in the 12th grade a mark of 81 gave a pupil 16th position.

Tables XIII - XXVIII show the quartile placement of high school marks, silent reading scores and mental test I.Q.

By "perfect correspondence of cases" is meant the number in the same quartile of the two sets of marks compared. A student is said to be misplaced when his marks in high school are in one quartile and his score in the test placed him one, two, or three higher or lower; e.g., in the table showing the quartile placement of the school marks (9th grade) with the Monroe Silent Reading Score there were 24 students in the first

TABLE XIII

Quartile Placement of School Marks (9th Grade) and the
Monroe Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	24	9	5	6	4	15	29
2	40	10	25	5	0	30	35
3	23	7	9	7	0	16	23
4	24	6	9	6	3	18	30
Total	111	32	48	23	7	79	117
29% Perfect Correspondence							117 Point Misplacement

TABLE XIV

Quartile Placement of School Marks (9th Grade) and
Scores in Chapman Silent Reading Test.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	32	16	9	6	1	16	24
2	26	7	16	2	1	19	23
3	37	12	18	7	0	25	32
4	16	7	5	1	3	9	16
Total	111	42	48	16	5	69	95

38% Perfect Correspondence

95 Point Misplacement

TABLE XV

Quartile Placement of School Marks (9th Grade) and
Term A I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	29	13	10	4	2	16	24
2	29	10	16	2	1	19	23
3	26	12	9	5	0	14	19
4	27	11	11	2	3	16	24
Total	111	46	46	13	6	65	90
41% Perfect Correspondence							90 Point Misplacement

TABLE XVI

Quartile Placement of School Marks (9th Grade) and
Terman B I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	26	16	8	2	0	10	12
2	27	9	12	6	0	18	24
3	37	17	13	7	0	20	27
4	21	10	7	2	2	11	17
Total	111	52	40	17	2	59	80

TABLE XVII

Quartile Placement of School Marks (10th Grade) and
the Monroe Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	19	9	4	5	1	10	17
2	28	6	16	6	0	22	28
3	20	5	10	5	0	15	20
4	19	7	6	5	1	12	17
Total	86	27	36	21	2	59	82

31% Perfect Correspondence

82 Point Misplacement

TABLE XVIII

Quartile Placement of School Marks (10th Grade) and
Score in Chapman Silent Reading.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	26	9	9	6	1	16	23
2	15	5	11	0	0	11	11
3	33	8	18	7	0	25	32
4	12	6	4	1	1	6	9
Total	86	28	42	14	2	58	75

32% Perfect Correspondence

75 Point Misplacement

TABLE XIX

Quartile Placement of School Marks (10th Grade) and
Terman A I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplace- ment
			1	2	3		
1	22	8	5	6	3	14	26
2	17	5	11	1	0	12	13
3	25	10	10	5	0	15	20
4	22	9	4	7	2	13	24
Total	86	32	30	19	5	54	83

37% Perfect Correspondence 83 Point Misplacement

TABLE XX

Quartile Placement of School Marks (10th Grade) and
Terman B I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	17	10	2	3	2	7	14
2	16	6	8	2	0	10	12
3	36	12	17	7		24	31
4	17	9	3	4	1	8	14
Total	86	37	30	16	3	49	71
41.8% Perfect Correspondence			71 Point Misplacement				

TABLE XXI

Quartile Placement of School Marks (11th Grade) and
Monroe Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	16	10	1	2	3	6	14
2	19	9	8	2	0	10	12
3	19	7	6	6	0	12	18
4	16	4	6	1	5	12	23
Total	70	30	21	11	8	40	67

42% Perfect Correspondence

67 Point Misplacement

TABLE XXII

Quartile Placement of School Marks (11th Grade) and
Chapman Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	15	11	2	0	2	4	8
2	12	3	8	2	0	10	12
3	30	9	14	7	0	21	28
4	12	5	4	2	1	7	11
Total	70	28	28	11	3	42	59

40% Perfect Correspondence

59 Point Misplacement

TABLE XXIII

Quartile Placement of School Marks (11th Grade) and
Terman B I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	9	5	3	1	0	4	5
2	14	1	12	1	0	13	14
3	33	9	15	9	0	24	33
4	14	7	3	3	1	7	12
Total	70	22	33	14	1	48	64
31% Perfect Correspondence		64 Point Misplacement					

TABLE XXIV

Quartile Placement of School Marks (11th Grade) and
Terman A I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	13	6	2	2	3	7	15
2	17	3	13	1	0	14	15
3	21	6	13	2	0	15	17
4	19	7	6	4	2	12	20
Total	70	22	34	9	5	48	67

31% Perfect Correspondence

67 Point Misplacement

TABLE XXV

Quartile Placement of School Marks (12th Grade) and
Monroe Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	16	13	1	2	0	3	5
2	17	5	8	4	0	12	16
3	17	6	10	1	0	11	12
4	16	8	2	4	2	8	16
Total	66	32	21	11	2	34	49

48% Perfect Correspondence

49 Point Misplacement

TABLE XXVI

Quartile Placement of School Marks (12th Grade) and
Chapman Silent Reading Test Scores.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	14	9	3	1	1	5	8
2	11	2	9	0	0	9	9
3	29	4	17	8	0	25	33
4	12	7	2	3	0	5	8
Total	66	22	31	12	1	44	58

33% Perfect Correspondence

58 Point Misplacement

TABLE XXVIII

Quartile Placement of School Marks (12th Grade) and
Termian B I.Q.

Quartile	No. Cases	No. Cases of perfect Correspon- dence	Quartile Misplacement			No. Cases of Total Misplace- ment	Total Point Misplacement
			1	2	3		
1	7	4	2	1	0	3	4
2	14	4	10	0	0	10	10
3	31	9	15	7	0	22	29
4	14	8	3	3	0	6	9
Total	66	25	30	11		41	52
38.8% Perfect Correspondence							52 Point Misplacement

quartile of the high school marks. Nine of these were in the same quartile in the test score; five were in the second quartile of the test score; six in the third; and four in the fourth or highest quartile of the test score. This gives a total of fifteen misplacements and a total point-misplacement of twenty-nine. The point-misplacement is calculated as follows:

The number of pupils misplaced is multiplied by the quartile misplacement and the sum of these products is called the total point misplacement; e.g., $(5 \times 1) + (6 \times 2) + (4 \times 3) = 29$ or the total point misplacement in the first or lowest quartile.

The average misplacement for the silent reading test scores and the school marks for four years was 75.2 while for the Terman I.Q.'s and the high school marks it was 70, which again gives a very slight advantage to the mental tests as predictors. This advantage is so small that it is probably not significant.

Miss Anna McDonnell in her thesis,¹ "Comparative Validity of High School Marks and Mental Test Records in Predicting College Success," found the average point

¹ Unpublished. May be secured from the Massachusetts State College library.

misplacement of combination test scores and high school marks to be 78 which is but 8 points higher than was found in this study and 28 points higher than the point misplacement of the silent reading tests and high school marks.

CHAPTER V

SUMMARY AND CONCLUSIONS

SUMMARY

The average correlations of each test with the position in the grade seems to be in favor of the intelligence test as a predictor. The statistics are as follows:

Chapman	Average r with position in class	.485
Monroe	Average r with position in class	.33
Terman A I.Q.	Average r with position in class	.52
Terman B I.Q.	Average r with position in class	.527

The difference is not great in the case of the Chapman average, a matter of four points, which leads me to think that a reading test can be devised that will be as reliable as an intelligence test.

It is interesting to note at this point the fact that a composite score made from the Terman A I.Q. and the score in the Monroe Silent Reading Tests gave a high correlation of .64 with 12th grade success, which was higher than any single test, with the exception of Terman B which was .65. This correlation

of .64 is also higher than the average correlation between Terman A and Monroe Silent Reading in this grade. From these results it would seem that each test measures something that the other does not and that more of the characteristics of each should be combined in one test or that a composite score should be used in prediction.

In tables V and VI we find that in the Chapman test of those in the lowest quartile 7 or 34% failed; in this same quartile in the Monroe test 4 or 17% failed; in the Terman A I.Q. 7 or 24% failed; and in the Terman B I.Q. 9 or 35% failed.

This indicates that a pupil getting a score near the lowest quartile point which in the Chapman is 16.47, in the Monroe is 12.9, Terman A I.Q. is 91.87, and in the Terman B I.Q. is 91.75, need not fail if proper habits of study be combined with proper effort.

The Monroe Silent Reading Test scores when correlated with the marks gave the following results: Ninth grade $.24 \pm .06$; tenth grade $.25 \pm .06$; eleventh grade $.24 \pm .076$; twelfth grade $.60 \pm .052$.

The Monroe Silent Reading Test scores when correlated with the marks in the 12th grade gave a cor-

relation of $.60 \pm .052$, one of the highest correlations obtained.

Miss Anna McDonnell in her thesis in 1927 found, according to the statistics below, that the poorest work was done in the junior year. The quartile placements show this as do also the coefficients of correlations. Correlations at the University of Texas fell off 9 points from sophomore to junior year and Massachusetts State College notes a fall of 14 points from sophomore to junior year. This is interesting since a fall of 12 points from ninth to tenth grade and a rise of $3\frac{1}{2}$ points in 11th grade, and a 17 point rise in the 12th grade is found in this study. New Teachers with different standards would probably account for this in our case, since the 9th grade was completed in the Junior High. It will be noted that the rise of correlation continues through the junior and senior years, which rise is due perhaps in part to the fact that some of the loafers have dropped out.

The following colleges reported coefficients between freshman year marks and mental test scores as follows:

Yale	.38
Vassar	.33
Leland Stanford	.41

University of Toronto	.40
Brown	.46-.60
University of Montana	.46
University of Minnesota	.50
Columbia	.60

In this study we find a coefficient of correlation between the mental test scores and the marks as follows:

	Average Correlation for mental tests
Ninth Grade	.55
Tenth Grade	.43
Eleventh Grade	.465
Twelfth Grade	.635

Tables XXIX and XXX give a summary of the quartile placement study included in Tables XIII to XXVIII, showing the average percent of perfect correspondence and the average point misplacement for the four years. It will be noted that the average percent of perfect correspondence, when the silent-reading tests and marks are compared is 36.6 while the percent of perfect correspondence between the intelligence tests and marks is 37. The average point misplacement between

the silent-reading tests and marks is 75., while the average point misplacement between the intelligence tests and the marks is 70.7. Very close agreement.

TABLE XXIX

Summary of the Quartile Placements of the Test Scores
with the School Marks.

Silent Reading Test Scores and School Marks	Perfect Corres- pondence	Point Misplace- ment	No. Cases
Monroe Silent Reading and 9th Grade Marks	29%	117	111
Monroe Silent Reading and 10th Grade Marks	31%	82	86
Monroe Silent Reading and 11th Grade Marks	42%	67	70
Monroe Silent Reading and 12th Grade Marks	48%	49	66
Average	37.5%	<u>78.7</u>	

TABLE XXIX (continued)

Silent Reading Test Scores and School Marks	Perfect Corres- pondence	Point Misplace- ment	No. Cases
Chapman Silent Reading and 9th Grade Marks	38%	95	111
Chapman Silent Reading and 10th Grade Marks	32%	75	86
Chapman Silent Reading and 11th Grade Marks	40%	59	70
Chapman Silent Reading and 12th Grade Marks	<u>33%</u>	<u>58</u>	66
Average	35.75%	71.7	
Average Perfect Correspondence for both tests	36.6%		
Average Point Misplacement for both tests	75.		

It will be noted that the coefficient of correlation interpretation gives the advantage to the mental tests; but the quartile placement method indicates that a silent reading test may be as valid as a mental test when used for prediction.

TABLE XXX

Summary of the Quartile Placement of the Test Scores
with the School Marks.

Terman I.Q.'s and School Marks	Perfect Corres- pondence	Total Point Misplace- ment	No. Cases
Terman B I.Q. and 9th Grade Marks	47. %	80	111
Terman B I.Q. and 10th Grade Marks	41.8%	71	86
Terman B I.Q. and 11th Grade Marks	31 %	64	70
Terman B I.Q. and 12th Grade Marks	<u>38.8%</u>	<u>52</u>	66
Average	39.6%	66.7	

TABLE XXX (continued)

Terman I.Q.'s and School Marks			Total Point Misplace- ment	No. Cases
	Perfect Corres- pondence	%		
Terman A I.Q. and 9th Grade Marks	41	%	90	111
Terman A I.Q. and 10th Grade Marks	37	%	83	86
Terman A I.Q. and 11th Grade Marks	31	%	67	70
Terman A I.Q. and 12th Grade Marks	<u>28.7</u>	<u>%</u>	<u>59</u>	<u>66</u>
Average	34.4	%	74.7	
Average Perfect Correspondence for both tests 37%				
Average Total Point Misplacement for both tests 70.7				

SUMMARY

Present Use of Intelligence Tests.

Some educators are much opposed to the use of the so called intelligence test, while others use it as a means of determining the time when a pupil who is under age may enter school. This is the practice in West Springfield and Superintendent John R. Fausey reports it to be a very satisfactory procedure. Some educators advocate its use as a basis for promotion. The college Entrance Board offers each candidate a chance to take the Scholastic Aptitude Test. This is a long and difficult test, which together with the candidates' achievement in the different subjects in which he has been examined, determines whether the candidate is to be admitted to college or not. The Y.M.C.A. College at Springfield is using a psychological test for the first time this year to determine the fitness of candidates. The dean of freshman at Brown University in an address before the University Club of Springfield made a statement to the effect that a student at Brown with an I.Q. below 110 found it very hard to get along. Smith and Wright in a study of 150 cases found a correlation of $.83 \pm .0178$

between the Stanford Achievement Tests used as a measure of school work, and intelligence as measured by the Otis Self-Administering Intelligence Test. They also found a correlation of $.81 \pm .024$ between this same intelligence test and the Indiana Composite Achievement Test which includes nine school subjects.¹

These correlations are higher than the correlations obtained in this study which difference is due possibly to the objectivity of Achievement Tests.

W. S. Monroe says, "A general intelligence test measures general capacity to do school work, and a student's capacity to do work in a particular subject may vary from his general or average capacity." This same author also says, "The scores of all members of a class will not be perfectly accurate. Out of one hundred there are frequently as many as ten or thirty which are sufficiently erroneous to lead to distinctly misleading interpretations."² In addition it may be said that teachers' marks are not wholly objective and no person works up to his ability. These factors tend to lower the coefficient of correlation between intelligence test scores and school marks.

¹.Smith and Wright, Tests and Measurements, page 443.

².Walter S. Monroe, Directing Learning in the High School.

Present Use of Silent Reading Tests

W. S. Monroe says, "Since the study of most subjects taught in the high school makes large demands upon ability to read textbooks, standardized silent reading tests will yield vital information concerning the ability of students to do school work."¹

From this and the findings of this study it would appear to the writer that silent reading tests are valuable instruments in the field of education.

In regard to further study of the question of tests and measurements it appears to the writer that it would be enlightening to have a study made using mental tests, silent reading tests and standardized objective test scores instead of teachers' marks as was done in this study.

¹. Walter S. Monroe, Directing Learning in High School, page 387.

APPENDIX

Distribution of School Marks for Grade Nine.

<u>Marks (5 point interval)</u>	<u>No. Cases</u>
90-94	5
85-89	15
80-84	16
75-79	26
70-74	33
65-69	13
60-64	2
55-59	<u>1</u>
Total	111

The central tendency in this distribution is at the five point interval, 70-74 or C- according to the marking system.

Distribution of School Marks for Grade Ten.

<u>Marks (5 point interval)</u>	<u>No. Cases</u>
90-94	2
85-89	9
80-84	14
75-79	27
70-74	15
65-69	11
60-64	7
55-59	<u>1</u>
Total	86

The central tendency of this distribution is at the five point interval, 75-79 or C+ according to the marking system.

Distribution of School Marks for Grade Eleven.

<u>Marks (5 point interval)</u>	<u>No. Cases</u>
90-94	2
85-89	3
80-84	11
75-79	21
70-74	20
65-69	6
60-64	<u>7</u>
Total	70

This table shows the distribution of high school marks has a central tendency at two of the five point intervals, 70-74 and 75-79 or C- and C+ according to the marking system.

Distribution of School Marks for Grade Twelve.

<u>Marks (5 point interval)</u>	<u>No. Cases</u>
90 94	1
85 89	7
80 84	13
75 79	20
70 74	17
65 69	7
60 64	<u>1</u>
Total	66

The central tendency in this distribution is at the five point interval 75-79 or C+ according to the marking system.

Ranks in School Marks for the Different Grades and the Scores in the Mental Tests and Silent Reading Test for Each Pupil									
No.	Ranks			Silent Reading Scores		Terman I. Q.'s			
	9th Grade	10th Grade	11th Grade	12th Grade	Monroe Chapman	Terman A.	Terman B.	Terman I. Q.'s	Terman B.
1.	77	61	74	77	17	111	112	112	112
2.	75	71	79	78	18	103	102	103	103
3.	74				19	113	113	113	113
4.	72	73	76	81	17	115	112	112	112
5.	82	77	72	76	15	109	115	115	115
6.	77	79	84	82	15	102	111	111	111
7.	70				17	84	88	88	88
8.	88	87			15	123	118	118	118
9.	77	74			11	91	86	86	86
10.	68	70			10	85	89	89	89
11.	70				11	74	75	75	75
12.	70				14	94	97	97	97
13.	70				7	84	95	95	95
14.	85	67	60	60	11	99	99	99	99
15.	86	75	70	66	19	116	113	113	113
16.	90	87	76	87	20	131	128	128	128
17.	81	75			20	114	115	115	115
18.	82	87	80	82	21	104	111	111	111
19.	89	79	85	84	14	109	115	115	115
20.	78	70	73	74	18	116	112	112	112
21.	68	60	70	70	11	93	91	91	91
22.	75				20	93	93	93	93

No.	9th Grade	Rank 10th Grade	11th Grade	12th Grade	Silent Reading Scores		Terman I.Q.'s	
					Honroe Chapman	Yonroe Chapman	Terman A.	Terman B.
23.	78	81	70	77	19	16	109	107
24.	75				16	17	93	94
25.	78	72			14	19	109	100
26.	90	91	90	88	20	26	116	115
27.	82				19	21	120	119
28.	65	64	68	70	13	15	102	103
29.	80	86	86	79	14	28	90	102
30.	72	77	78	79	20	27	107	109
31.	63	72	70	68	14	15	96	93
32.	76	64	60	67	10	20	92	102
33.	71	63			15	16	101	101
34.	80	74			17	23	99	111
35.	85	76	80	69	11	19	88	93
36.	73	78	71	75	18	15	92	103
37.	71	70	78	74	15	22	105	118
38.	82	82	77	83	22	23	103	102
39.	85	81	77	83	17	22	112	111
40.	74	62	77	70	13	23	99	99
41.	82	75	79	85	20	22	111	120
42.	70	65	60	70	15	21	94	101
43.	72	78	74	81	20	22	117	121
44.	71				16	19	98	100
45.	76	77	76	76	14	20	88	98
46.	70	65	60	65	13	19	82	84
47.	80	65	65	70	10	20	93	97
48.	77	70			19	18	97	106
49.	65	70	75	75	14	17	93	90
50.	80				12	17	97	102
51.	76				15	17	95	94

No.	9th Grade	Rank 10th Grade	11th Grade	12th Grade	Silent Reading Scores		Terman I.Q.'s	
					Monroe	Chapman	Terman A.	Terman B.
52.	65	74	73	72	15	13	99	108
53.	88				9	20	93	98
54.	71	66	69	73	18	23	112	111
55.	79	78	76	78	18	20	110	110
56.	76	77			13	12	77	82
57.	70				10	17	91	84
58.	77	76	73	69	15	15	105	112
59.	72	67	70	71	21	18	101	86
60.	88	75	71		13	17	97	101
61.	72				9	15	90	94
62.	70				13	20	96	97
63.	61				13	10	90	84
64.	78	75	78	75	21	26	128	112
65.	67	68	61	71	11	10	81	88
66.	81	87	86	80	14	19	127	120
67.	66	66	60		17	17	98	96
68.	73	68	75	76	16	18	90	90
69.	85	82	79		17	20	115	106
70.	71	75	77	81	12	21	95	92
71.	71				18	17	117	115
72.	77				15	17	80	82
73.	68				9	15	84	84
74.	72	65			15	15	88	112
75.	90				20	25	114	123
76.	89	87	80	91	19	23	125	112
77.	80	77	79	82	15	24	111	96
78.	73	72	64	71	15	20	93	107
79.	85	88	81	87	17	20	104	

No.	9th Grade	Rank 10th Grade	11th Grade	12th Grade	Silent Reading Scores		Terman I.Q.'s	
					Monroe	Chapman	Terman A.	Terman B.
80.	89	87	81	80	17	20	115	103
81.	77	75	77	77	16	19	114	117
82.	79	78	83	84	19	22	112	111
83.	80	80	71	80	18	19	113	104
84.	67	77	75	70	16	22	102	102
85.	71	77	68	78	17	17	90	89
86.	74	62	65	65	10	14	98	99
87.	87	88			21	23	111	129
88.	73	75			20	23	114	106
89.	77	72	72	75	19	22	114	112
90.	73	78			15	11	90	91
91.	76	83	75	70	14	27	96	90
92.	82	80	84		9	21	99	100
93.	87	74	71	77	18	24	115	113
94.	78	71	72	72	17	21	97	100
95.	86	71	72	75	10	17	84	98
96.	69	78	71	73	20	24	106	111
97.	65	67	79		117	23	79	80
98.	83				20	25	114	119
99.	65				19	15	71	75
100.	70	80	75	75	15	17	106	87
101.	75				10	19	90	93
102.	72	82	80	84	12	15	84	86
103.	90	83			15	22	111	122
104.	72	75	69	79	15	15	88	90
105.	57	82	80	77	18	15	104	107
106.	77				11	16	81	92

No.	Rank			Silent Reading Scores		Terman I.Q.'s	
	9th Grade	10th Grade	11th Grade	Monroe	Chapman	Terman A.	Terman B.
			12th Grade				
107.	70	55		12	11	77	74
108.	81	80		13	19	100	95
109.	66	76		16	20	86	91
110.	94	93	89	21	29	135	135
111.	74	70	70	20	21	99	109

BIBLIOGRAPHY

1. Monroe, Devoss and Kelley,
Educational Tests and Measurements,
Houghton Mifflin Company.
2. Monroe, Walter S.,
Directing Learning in the High School,
Doubleday Page.
3. Monroe, Walter S.,
The Theory of Educational Measurements,
Houghton Mifflin Company.
4. Ruch and Stoddard,
Tests and Measurements in High School
Instruction,
World Book Company.
5. Rugg, H. O.,
Statistical Method Applied to Education,
Houghton Mifflin Company.
6. Smith and Wright
Tests and Measurements,
Silver Burdett.

Approved by

H. Neslick

A. H. Lindsay

Leon A. Bradley

Committee on Thesis.

Date June 5, 1931

