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A Comparison of the Vocabulary Score of the Revised Stanford-Binet Scale and the Word Meaning of the Stanford Achievement Test

Mary Patrice McGlone
Loyola University Chicago

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A COMPARISON OF THE VOCABULARY SCORE OF THE REVISED
STANFORD-BINET SCALE AND THE WORD MEANING
OF THE STANFORD ACHIEVEMENT TEST

BY

SISTER MARY PATRICE McGLONE, O.S.F.

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER
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Vita:

Born -- Consett, Co. Durham, England, 1911

Completed --

St. Joseph High School, Milwaukee, Wis. 1927

Bachelor of Arts, De Paul University, Chicago, Ill. 1940

Graduate Work, Loyola University, Chicago, Ill. 1942-44

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CHAPTER I

PURPOSE OF THE STUDY

When certain children show a deviation from the mean of normal childhood, they are classified as "problem children." If curves were drawn to represent their mental, moral, and social development, some would have positive, others, negative skewness. What kind of curve would best characterize their word knowledge? Interest in this question prompted the writer to make a comparative study of two vocabulary tests, administered individually to a selected group of children referred to the Loyola Center for Child Guidance.

The tests compared were the vocabulary of the Revised Stanford-Binet Intelligence Test and the Word Meaning of the Stanford Achievement, the former requiring an oral response to each word presented, the latter, a printed multiple-choice procedure, depending upon reading ability. Three forms of the achievement test had been administered. One hundred twenty-two had been given the New Stanford Achievement, Forms V or W; 57, the Stanford Primary, Form D; 14, the Stanford Advance, Form E.

The studied group included 193 children who had been referred for psychological service to the Loyola Center between December, 1940, and December, 1943. Others tested during this interval were excluded because they were disabled readers who had been given diagnostic tests, or they were feeble-minded who had not been given an achievement battery.

Chronologically, the group ranged in age from 6 years 8 months to 20 years 6 months; mentally, from 5 years 5 months to 20 years 6 months. Reasons

for referral to the Center cannot be specifically tabulated, because often the immediate complaint involved only one factor, such as behavior, but the analysis of the problem usually revealed a "constellation of factors." In general, reasons for referral were: behavior at home and at school, vocational guidance, unsatisfactory school adjustment. The latter was the most prominent complaint listed.

In order to obtain a complete picture of the group, it was necessary to study the function of the Loyola Center, its method of integrating personal data, and its procedure in giving psychological service to the maladjusted individual.

The Loyola Center for Child Guidance

Children whose behavior is erratic, peculiar, or abnormal, whose accomplishment does not measure up to capacity, or whose ability is unequal to the tasks imposed are considered maladjusted. This group also includes those who persist in the retention of infantile habits long after most children have reached more mature stages of development, and those who have developed undesirable attitudes which prevent them from making worth-while contributions and rational adjustments to society.

To help the maladjusted child solve his problems, the Loyola Center opened its doors for service in July, 1941. The purposes of the psychological service of the Center are adequately expressed in the words of the Director:

What does the Loyola Center for Child Guidance mean? Help for unhappy boys and girls; capsules of counsel for discouraged mothers and dads. Childhood years should be happy, not sad. Unfortunately, too many children are unhappy and don't

know where to turn. What can one do about it? We can try to find the roots of their trouble—a slow process—and help the boys and girls (and their parents, too, of course,) to remove the causes, or to face the situation in a healthy way. Then we can let nature, aided by God's grace, restore the happiness that is the birthright of every child. (7)

How does the Center attempt "to restore the birthright?" The first step is the fact-finding procedure.

Prior to the examination of the child, parents or guardians are interviewed by the Director. Since the whole situation must be canvassed, at this visit, the parents give the personal and family history of the child. This includes heredity, developmental history, health, home conditions (both as to the economic situation and relationships between different members of the family), methods of training and discipline used by parents, observations as to the child's personality and conduct, an account of his interests, and a description of his play life and companions.

A data sheet requesting the following information is sent to the school: grades skipped, grades repeated, demotions, absences and reason for absences, mental tests, latest test scores in the tool subjects, latest school marks, specific difficulties in achievement, special abilities, difficulties in behavior, reactions to discipline, reactions to failure and success, social adjustment with children individually and as a group.

The psychologist appointed for the case, after studying and discussing with the Director the data submitted by the parents and school, administers the tests. During all contacts she observes the child's attitudes, habits of industry, cooperation, and initiative. These are just as important as the actual test scores, and must be included in the final interpretation.

During the first meeting, the psychologist ordinarily administers the Revised Stanford-Binet, the Snellen test for visual acuity, and the whispered-voice test for auditory discrimination. The child returns another day for a battery of achievement tests. In the case of adolescents, personality and vocational tests are often included.

The next step is "humanizing and translating the facts into a portrait of the child." The psychologist discusses the case with the Director before she prepares her report. During this conference, they exchange information and piece together the available causative clues. As a result of this discussion, not only the factors that have induced the problem, but also the relationship of these factors becomes clearer.

In "humanizing and translating" the facts of the case, clinical procedure disregards raw scores, focusing on the interpretation of these scores. Not the scores, but the learning processes that they symbolize are the important feature. In her analysis of the case, the psychologist realizes that she cannot rely on a "naked psychometric test" as a significant piece of information about the child. Since behavior and personality difficulties in children are ascribed to a multiplicity of causes, it is evident that some of these may be relatively important in solving the problem of the child while others may be non-essential. Aware that treatment over the whole case is not effective, the psychologist adopts a scale of values; therefore, her recommendations emphasize those points in the case at which treatment is possible and will produce definite results.

The sending of the report to the parents and school does not terminate the case. Oftentimes the children need remedial measures. The Center

arranges for the tutoring of these children. Sometimes the school or the home can meet this need, but more often the tutor has to be supplied by the Center. All reports encourage the parents to continue contact with the Center as long as guidance is needed.

Rehabilitation of many maladjusted children is due to the spiritual and temporal guidance received at the Center. As a child guiding agency, it is doing a highly specialized job. The fact that it has succeeded in establishing a norm of confidence in the lives of many of its clients is the greatest compensation that it can receive.

The Importance of Vocabulary

The child's first words are obtained from direct association with acts, objects, and situations. Others come from experience through the medium of words that have already become familiar. When he enters school, a new element, the visual printed symbol, is added to his means of acquiring word knowledge.

Present-day education is taking into account the importance of the dictum of the Scholastics: "There is nothing in the intellect which is not first in the senses." Sight, hearing, touch, and the other senses are avenues to the mind. Today, more than ever, educators realize that the training of the senses serves the mind with food for thought, and that language is inadequate when it is not accompanied by objective realities which impress the senses.

Thus it is apparent that the child's experience is important in his educative process, and since the acquisition of vocabulary is part of this process, experience must play an important role in the word knowledge of the

child. In fact, all the levels of reading skill have a background of direct personal experience that gives meaning to the word, and the attempt to build a heavy structure of words upon a slender basis of experience leads inevitably to failure of comprehension.

Somewhere during the elementary school age, reading vocabulary catches up with spoken vocabulary and forges ahead. However, children who have not acquired phonic equivalents to the visual symbols are often delayed in progress in reading. Marion Monroe (16) points out that these children fail to comprehend the meaning of the text. They cannot utilize context in giving cues to words since their vocabulary is too meager to suggest possibilities for the unknown words.

It is evident, then, that three factors: experience, phonic elements, and visual symbols are important in the building of word knowledge, and this study considered these three aspects and their relation to each other. There seemed to be some evidence that the children whose vocabulary was inadequate were handicapped in the long and labored task of building up their knowledge. Such children are usually labeled as academic failures.

Vocabulary also plays an important part in the social life of the child, and unless he is able to use and comprehend the meaning of words expressed by the children of his own group, he is likely to be ostracized by them. Of course, there is no evidence that the child "who stands apart from his group as anti-social" is deficient in vocabulary. In general, however, the academic and social happiness of the child are closely allied to his command of words, and since his vocabulary is either an asset or a liability to him, its importance should not be minimized.

CHAPTER II

REVIEW OF RELATED LITERATURE

In reading psychological and educational literature one is impressed by the nature and variety of vocabulary studies. In a panoramic arrangement they are flashed before the reader, sometimes emphasizing the vocabulary of the child, at other times, that of the adolescent and the adult. The caption, "From Nursery School to College" would adequately describe these diversified studies.

The importance of vocabulary studies was emphasized by Kirkpatrick, one of the earlier investigators in the field of word knowledge, who says:

The vocabulary of a person represents in a condensed and symbolic form all that he has experienced and imagined. The breadth of his mental experience is indicated by the number of words that have for him a meaning, while the accuracy of his thinking is shown by the constancy and exactness of meaning with which he uses words. The study of the vocabulary ought therefore to be an important branch of psychological investigation. (13:157)

The numerous studies that have been undertaken seem like an answer to the plea of this early pioneer. Since it would be impossible to investigate all of them, the writer thought it best to review the literature that emphasized factors related to her problem. These factors are: (a) size of vocabulary, (b) vocabulary and intelligence, (c) vocabulary of the Stanford-Binet and Word Meaning of the Stanford Achievement Test.

Size of Vocabulary

It is the contention of many authorities that vocabulary at any age level is difficult to determine. On the other hand, the fallacy of this is championed by Carroll, who advances the following argument:

The linguistic response is directly observable and identifiable..... It can be studied in terms of the stimuli with which it is associated or in terms of the rate of occurrence under specific conditions. The linguistic response qua response can thus be treated behavioristically. It has the particular advantage that it can be treated readily in terms of the law of learning. The linguistic response is countable. It is thus amenable to statistical and psychometric treatment, particularly when numbers of responses are studied. (5:102)

The above argument is substantiated by Skinner. He claims that although the Stanford-Binet scale shows a rectilinear growth, the probable increase in size of vocabulary has positive acceleration, at least during preschool and elementary school years. After analyzing the studies of several investigators, he concludes:

The median vocabulary is two to four words at one year, twenty-two words at eighteen months, one thousand words at three years, twenty-five hundred words at six years, and fifteen to eighteen thousand words for the high school senior. (19:139)

Kirkpatrick (13) asserted that an accurate index of the size of one's understanding vocabulary might be obtained by a test made up of a hundred words taken by chance from the dictionary. Studies similar to Kirkpatrick's, utilizing words from the dictionary, were made by Babbitt (1), Brandenburg (7), and Terman (8).

The latter selected the last word of every sixth column in a dictionary containing approximately 18,000 words, presumably the 18,000 most common words in the language. The test was based on the assumption that 100 words selected according to some arbitrary rule will be a large enough sampling to afford a fairly reliable index of a child's vocabulary. This vocabulary test was arranged and standardized by Childs and Terman in 1911. It was used in the Stanford-Binet Scale, but in the 1937 Revised Stanford-Binet, the number of words was reduced to 45.

Terman claimed that an estimate of the size of a child's vocabulary could be obtained by multiplying the number of words known in the test by 180. Thus, the child who defined 20 words correctly had a vocabulary of 3,600 words. According to the standards for the different years, determined by the vocabulary reached by 60 to 65 per cent of the subjects of the various mental levels, this child would have a vocabulary on the eight-year level, regardless of his chronological age.

In defense of this sampling Terman states:

It may seem to the reader almost incredible that so small a sampling of words would give a reliable index of an individual's vocabulary. That it does so is due to the operation of the ordinary laws of chance. It is analogous to predicting the results of an election when only a small proportion of the ballots have been counted. If it is known that a ballot box contains 600 votes, and if when only 30 have been counted it is found that they are divided between two candidates in the proportion of 20 and 10, it is safe to predict that a complete count will give the two candidates approximately 400 and 200 respectively. (9:229-230)

Attacking the inadequate results of these early studies, Schwesinger (18) in her study of the social-ethical significance of vocabulary agrees with Doran (6) that early estimates of the extent of vocabulary at different age levels reveal conclusions that are speculative or based on inadequate evidence. Schwesinger also adds that even with more systematically planned methods, later investigations have resulted in no less widely different conclusions.

Random sampling from a dictionary has been sharply criticized as an inadequate method of determining a person's vocabulary. However, it is probable that Terman's list used in the Stanford-Binet, subjected to refined statistical analysis, and estimating where a child stands in the distribution of children of his own mental age, may be highly significant as an educational tool in determining the word knowledge of the child. Since present-day educational methods emphasize the achievement of pupils according to intellectual development, rather than according to chronological age, the vocabulary of the child, whether it be rated as an index of intelligence or not, should be weighed in the light of the child's mental age.

Vocabulary and Intelligence

Before the days of intelligence testing, there were many investigators who thought of the possible significance of the vocabulary test as a measure of intellectual ability. Kirkpatrick (op. cit.) considered the possibility of using a vocabulary test for admission to college. With the introduction of intelligence tests, many attempts have been made to correlate vocabulary with the intelligence quotient and with mental age. Brandenburg (op. cit.)

found a coefficient of .69 between scores on a combination of several intelligence tests (Knox-Healy, Binet-Simon, Cortis Reading, Starch Reading and Spelling) and vocabulary.

Terman (op. cit.) has always maintained that the vocabulary test is the best single test of general intelligence. He claims that if the vocabulary test alone be given in the Stanford-Binet series, the resulting I.Q. will probably be within 10 per cent of the I.Q. to be obtained from the entire scale. He reports a correlation of .91 between scores on the vocabulary test and scores on the entire scale, claiming that except for those children who come from exceptional homes, a measure of verbal ability might be used without injustice to indicate level of intelligence.

Cognizant of the fact that a test to be a valid measure of intelligence should try to be less representative of everyday experience in which language plays an important role, Terman made a great effort to increase the number of non-verbal tests. He admits that like other investigators he found it difficult to devise non-verbal tests for the upper levels which satisfy the requirements of validity, reliability, and economy. He states:

. . . At these levels the major intellectual differences between subjects reduce largely to differences in the ability to do conceptual thinking, and facility in dealing with concepts is most readily sampled by the use of verbal test. Language essentially is the shorthand of the higher thought processes, and the level at which this shorthand functions is one of the most important determinants of the level of the processes of themselves. (22:5)

In Wechsler's recent efforts to standardize an examination suitable for adults, he expresses an appreciation of the Terman vocabulary. He writes:

. . . our experience has shown that factors of schooling, etc., influence the effective range of an individual's vocabulary much less than is commonly expected. We have been much surprised to find that illiterates and even individuals of foreign birth who have acquired only a moderate amount of English are penalized far less by a vocabulary test than by many other seemingly less linguistic. (25:301)

Further evidence of the relationship of vocabulary and intelligence is furnished by Snedden (20). In an effort to establish a technique of testing adults, and to determine to what extent intelligence can be measured objectively during the course of an interview, this investigator gave a vocabulary test in disguised form. The words were selected from Schwesinger's (18) social-ethical vocabulary test and presented to the subject in such a way that the latter had no idea that he was being tested. The following table shows the correlation of the disguised intelligence-test interview with various tests of general intelligence.

Tests	r	S.D. r
Disguised Intelligence and Alpha	.8243	.0302
Disguised Intelligence and Otis	.8162	.0314
Disguised Intelligence and Terman	.8024	.0335

Although Snedden is aware that in this study vocabulary was correlated with tests that were highly charged with elements of vocabulary difficulty, he nevertheless concludes:

It is the writer's guess, however, made purely on the basis of the above data, that in a population having a Standard Deviation of about 30 months Mental Age, a perfectly reliable vocabulary test would correlate with a perfectly reliable test of general intelligence about .88. (20:34)

In the vocabulary-intelligence relationship, the part that word knowledge plays in intelligence tests has been the subject of controversial discussion. Many authorities claim that intelligence tests that are essentially based upon word knowledge are not adequate means of testing the intelligence of children. Gardner (9) protests that children residing in remote districts and in humble circumstances, deprived of books and an opportunity to hear language spoken extensively, might be at a decided disadvantage. He asks if it is sound practice to measure intelligence, that which is inherited, with intelligence tests that are largely dependent upon vocabulary, which is acquired.

This same idea is expressed by Dr. Ide who contends:

The size of the vocabulary, for instance, and the amount of general information collected, depend upon two factors: first, the innate mental ability of the child; and second, his environmental opportunities. The first is, of course, unchangeable; the second can be and is often changed. (12-160)

From the above conclusions, it is apparent that children are penalized if they have not had the opportunity to come in contact with the words employed in intelligence tests. In order to substantiate this conclusion, Gardner (op. cit.) experimented with a group of 174 children. The purpose of the investigation was to ascertain whether the intelligence quotients of the children would increase under conditions in which they had an artificial and abnormally favorable opportunity to learn the meaning of words previously unknown, but appearing in an intelligence test subsequently taken.

The group, pupils of the fourth, fifth, and sixth grades of Fair Garden School, Knoxville, Tennessee, were given the National Intelligence Test,

Scale A, Form 1. Immediately upon the completion of the test, each child was given the vocabulary test which included 219 words taken from the National Intelligence Test, Scale A, Form 2. When the latter test was checked, it was returned, so that each child could see his errors. Then an intensive and extensive method of teaching the words was instituted. Seven months later, the National Intelligence Test, Scale A, Form 2, of which the words had been taught, was given. The differences in I.Q. of the two tests ranged from a loss of seven points to a gain of 49 points, with some making the same score on both tests. Of those who lost, fifty per cent had an I.Q. of less than 75 as determined by both tests. Sixty-two per cent of the total number who actually lost had an I.Q. under 90. Five children made no change on the tests at all. Eighty per cent of those who did not advance had an I.Q. of 80 and under. Of those who failed to gain and those who lost, almost 70 per cent had an I.Q. below 90. However, many other children with low I.Q. made nice progress. According to the investigator, the reason for this is unknown.

The experimenter concludes his summary with the following statement:

The general conclusion of this study is that added language or the knowledge of the meanings of words affords added ability to do abstract thinking and reflects itself in a raised I.Q.; that pupils with superior language advantages have superior opportunity to express their native intelligence. It is not here contended that the teaching of word meanings will put native intelligence where it has not already been placed by nature; it only makes possible greater intelligence manifestation, other things being equal . . .
(9:59)

The question of the relationship of intelligence and vocabulary is still open for rebuttal. Considering the fact that many educators and psychologists

are undecided as to the real meaning of intelligence, it is not surprising that there is controversy. Since intelligence, the very topic of the argument, is not clearly defined, it is not strange that false conclusions result.

One of the most common definitions of intelligence is that it is the ability to do abstract thinking. This definition is acceptable, provided that the abstract thinking includes concepts that are immaterial or spiritual entities existing in the mind by means of which the mind grasps the innermost reasons or essences of things and understands that each essence may be realized in an unlimited number of individuals. Now, if word meanings are tools of abstract thinking, it naturally follows that the more tools a person possesses, the more abstract thinking he will do. On the other hand, one has to consider that it is not only the possession of the tools, but also more efficient use that will finally result in better abstract thinking.

Study Comparing the Stanford-Binet Vocabulary and the Word Meaning of the Stanford Achievement

Although there have been some studies which utilized the Stanford-Binet test and the Stanford Achievement Scale, as far as the writer can ascertain, Florence Goodenough (10) is the only one who considers the vocabularies of the two tests. She compared the Reading Tests of the Stanford Achievement Scale and other variables, among which was the vocabulary of the Stanford-Binet. Her data were taken from the records of 100 children who were studied at the Minneapolis Child Guidance Clinic between October, 1924, and April, 1925.

Chronologically, the group ranged from 6 to 17, with a mean age of 11.7 years and a Standard Deviation of 2.45, as shown on the following page. In

the grade distribution (indicated on p. 16) the Standard Deviation is shown in half-years because of mid-term promotions. The distribution of the Intelligence Quotient shown below, upon inspection, appears to be a normal distribution.

AGE DISTRIBUTION

<u>Age</u>	6	7	8	9	10	11	12	13	14	15	16	17
<u>No.</u>	1	3	12	13	15	12	8	15	10	8	2	1
Total Cases 100.					Mean Age 11.7			SD, 2.48 years				

GRADE DISTRIBUTION

<u>Grade</u>	2B	2A	3B	3A	4B	4A	5B	5A	6B	6A	7B	7A	8B	8A	9B	9A
<u>No.</u>	2	5	9	8	6	7	7	11	7	6	6	5	12	6	2	1
Total Cases 100.					Mean Grade 5.83			SD, 3.95 (half years)								

INTELLIGENCE QUOTIENT DISTRIBUTION

<u>Range</u>	60-69	70-79	80-89	90-99	100-109	110-119
<u>No.</u>	5	11	20	18	23	13
<u>Range</u>	120-129	130-139	140-149			
<u>No.</u>	5	1	4			
Total Cases 100.			Mean I.Q. 97.6		SD, 18.3	

Commenting on the intercorrelations (grade placement, chronological age, mental age, mental age vocabulary, vocabulary of the Stanford-Binet and Word Meaning of the Stanford Achievement Scale), Goodenough says: "It is interesting to note that for the total group correlation between grade placement and chronological age is higher than between grade placement and either mental age or reading ability." (10:526)

In summarizing, the investigator points out the following facts as revealed in the study: (1) The correlation between grade placement and chronological age was found to be higher than between grade placement and any of the measures of ability. (2) A high correlation was found between the reading tests of the Stanford Achievement Scale and the Stanford-Binet mental test. (3) The Stanford-Binet vocabulary test shows a very high correlation both with mental age and the score on the reading tests. Of the three tests it correlates highly with the Word Meaning. (4) Children of superior mental ability tend to make their highest score on those tests involving the larger language units. They are likely to make their lowest on the word meaning test. With backward children, the reverse tendency is noted. (5) In cases where economy of time became necessary, the use of Test 3 (Word Meaning) alone as a measure of reading ability introduces a relatively small element of error when compared with the results which would have been obtained by the use of the total series of three tests.

CHAPTER III

MATERIALS AND METHOD OF THE PRESENT STUDY

The Stanford-Binet Scale

The development of reliable tests whereby degrees of intelligence can be gauged in individuals represents one of the really great achievements of modern experimental psychology. The importance of psychological testing is emphasized by Harmon who writes:

For most practical purposes it is not sufficient merely to say that a given subject is bright or dull, intelligent or unintelligent; but one would like to know how bright or how dull this particular individual may be. Is he, for example, more intelligent than three-fourths of the population at large; dull as the lowest 10 per cent of his fellows; or only as intelligent as the average person? These are the questions which intelligence tests are designed to answer. (11:389)

As was pointed out in the previous chapter, the meaning of intelligence is a controversial point, and psychologists are cognizant of the difficulty of defining intelligence functionally, that is, in terms suitable for measurement. Harmon questions the possibility by asking:

Granting that intelligence is the actual manifestation of intellect; that it is displayed in the processes of abstraction, concept formation, judgment, and reasoning; and granting, too, that intellectual activity is mingled to a greater or less extent with much of our ordinary behavior, how is this to help us when it comes to measuring the extent to which intelligence is displayed in one's daily life? (11:389)

This author points out that Binet's interpretation of intelligence as "adaptability to a novel situation" justified him in attempting to measure intelligence. Without doing violence to the true concept of intellect, Binet has been somewhat specific in indicating and describing situations in which intelligent or unintelligent behavior may be observed. Harmon adds that by following Binet's procedure, the psychologist is enabled to obtain a picture of the intellectual efficiency of a given individual, and on this basis, to make certain predictions as to how that individual will or will not react in other situations involving similar functions.

Many psychologists attempting to measure intelligence have failed, not only because of the inadequacy of standardized scales, but also because of confusion of distinction between sense and intellect. Recognizing these obstacles, Binet made a valiant attempt to produce a test that would measure intelligent adaptability to novel situations.

In 1900 an association of psychologists and educators, under the direction of Binet, worked on practical school problems. In 1904 the Minister of Public Instruction appointed Binet a member of a commission composed of medical men, educators, and scientists, to make recommendations for the administration of special classes in the public schools of France. Despite considerable opposition by many of the physicians, Binet determined to put mental tests to practical use, and along with him Simon tried them out in the schools. The test known as the Simon-Binet Scale had thirty tests, arranged in a series of increasing difficulty, and grouped according to age. The tests were administered to groups of normal and abnormal French school children. From these results, the authors were able to indicate roughly how far

into the scale a child of a given age would work. Binet realized that one of the important objectives was the standardization of procedures.

Practice with the 1905 Scale provided Binet with the experimental data for the next revision. In the 1908 revised scale, the tests were classified according to the mental age level for which they were most appropriate. The object of this classification was to place a given item at that age level where it would be passed by the average child of the age in question. In other words, this scale grouped the tests according to mental age, and to Binet falls the honor of crystallizing this term.

In 1911, Binet rearranged some of the age levels, introducing some new tests and omitting a few older ones. At first he had utilized rather crude methods, but gradually by careful experimentation he refined them, until he finally produced a new method for the measurement of intelligence.

The Binet Scale was introduced into America by Goddard, who standardized a scale suited to American children. He used the 1908 Scale as a basis. Other revisions of the Binet Scale were made by Kuhlmann and Yerkes. The main contribution of the former was the standardization of the tests for ages below three.

In 1916, Terman and his co-workers made a thorough revision of the original Binet Scales, using the test results of the 1908 and 1911 Scales. The placing of six tests in each age group simplified calculations for mental age in years and months. The data for the revision, known as the Stanford-Binet, were based upon the examination of 2,300 subjects including 1,700 normal children, 200 mental defectives and superior children, and 400 adults.

Terman claimed that although the Stanford-Binet afforded a satisfactorily valid and reliable measure over a fairly wide intermediate range, it was defective at both extremes. He admitted that a number of tests of the scale were unsatisfactory because of low validity, difficulty of scoring, susceptibility to coaching, etc. He realized that one of the severest limitations to the usefulness of the scale was the fact that no alternative form was available for use in retesting or as a safeguard against coaching. Therefore, in the 1937 revision, two scales, Form L and Form M, were provided, differing almost completely in content, but mutually equivalent with respect to difficulty, range, reliability, and validity. In content Form L bears greater resemblance to the original Stanford-Binet Scale.

The Revised Stanford-Binet Scale, despite its improved standardization and technique, is still subjected to a volley of criticism. Some psychologists claim that it is an antiquated, unreliable instrument which should give place to more modern and scientific techniques. Others persist in regarding it as the best psychological instrument at their disposal. Vernon, one of its champions and defenders, writes:

The Binet test partakes of both the clinical and psychometric approaches. It has flexibility and the control of the subjective situation characteristic of the clinical interview, but at the same time sufficient objective control to yield a reliable measure of ability. Binet's first scale was predominantly clinical; the tests were chosen from children's everyday experience and were intentionally heterogeneous, so as to supply the tester with as many different samples as possible of the testee's mentality. But at the same time the tasks were selected so as to discriminate between older and younger children. To this extent the psychometric conception was adopted; the number of tasks provided an index of the testee's mental maturity. In the

Stanford revisions, especially in the most recent, Terman appears to have compromised further with psychometric standards, since the tests are somewhat less representative of everyday experience, their application and scoring have been made more definite, and there has been a more elaborate study of the consistency of each test with the scale as a whole. (24-106)

The importance of the Stanford-Binet Scale as a clinical tool is emphasized by Loutitt who states: "In a recent survey of psychological clinics made by the Clinical Section of the American Psychological Association, (1935), it was found that the most frequently used test was the Stanford revision of the Binet." (15:49-50)

The high reliability of the Stanford-Binet as a whole may be somewhat indicative of the high reliability of single tests in the scale. Therefore, the vocabulary, as a single test, could be considered a significant criterion with which to compare other vocabularies. The fact that the vocabulary test is used to determine whether or not the subject knows the meaning of the word, and not whether he can give a completely logical definition, is another reason why it can be used as a reliable standard of comparison with other tests of word-meaning.

In an article defending the vocabulary test as a psychological tool, Harriet Babcock asserts:

Terman's discovery of the relation of the vocabulary test to developing intelligence might not have changed the general idea that it was dependent upon age and experience, since opportunity to know more words is of course greater at each life age, if he had not also found out that children who did not succeed in school knew a smaller number of critical words than children of the same age who did well in school; and that the ones who did best had the largest vocabularies, often even when they were younger and when a foreign language was spoken in the home. (2:246)

The years have only served to strengthen Terman's original evaluation of the vocabulary test. Research has shown that in the hands of experienced psychologists it is like a powerful searchlight which throws light on the mental capacity, and in many instances predicts the mental age.

The Stanford Achievement Test

Intelligence tests are designed to measure manifestations of general intellectual capacity as demonstrated in action, and behavior. Achievement tests attempt to measure a child's accomplishments and attainments in specific studies. These tests provide an estimate and evaluation of a child's level of performance. As educational tools, both are of paramount importance. As clinical tools, both are essential in giving a complete picture of the child.

In the Loyola Center for Child Guidance, many types of achievement tests are administered. The psychologist chooses the test that will "bring to the foreground" the best achievement of the child being tested. One of the most frequently selected tests is the Stanford Achievement Test.

This test, appearing in two forms, A and B, was first published in 1923. It was standardized and equated on the basis of scores of 1500 pupils. In 1925, the norms were revised on the basis of careful sampling of 2000 cases from elementary school pupils in twenty-four cities or districts in the United States. A thorough revision of the tests was completed in 1929, giving the new forms U, V, W, Y, and Z. The Directions for Administering the New Stanford Test explain the purpose of the revision. The following are the most essential reasons:

The revision extended the Paragraph Meaning to measure ninth-grade ability. The Sentence Meaning Test was discontinued, since the other two reading tests cover the subject adequately. The length of the line was shortened in most of the tests to conform with the results of scientific investigations of eye movements, and to simplify the scoring. . . (21:2)

Later an advanced battery was introduced. The 1940 edition contained a battery of tests that surveyed the fields of reading, language usage, arithmetic, literature, social science, elementary science, and spelling. Individual subject tests were then available with alternate forms, D, E, F, G, and H.

Since reading challenges the child's ability to grasp not only the meaning of the total context, but also his skill in acquiring the meaning of isolated words, a test in reading should consider both aspects. To meet this requirement, all forms of the Stanford Reading Achievement Test are divided into two sections, namely: Word Meaning, and Paragraph Meaning.

Meaning plays a predominant role in both phases. This is emphasized by Skinner who writes:

The growth of meaning of a word is essentially a growth in the number of contexts in which it may be used and to which it may contribute. It is not so much that a given word has a fringe of imagery, ideas, and the like, joined to it more or less firmly, as that it can enter fruitfully into many language or perceptual patterns. When a new ideo-verbal or perceptual verbal pattern contains an old word, that word's meaning has grown; when a familiar ideational or perceptual pattern contains a new word, vocabulary has grown in size . . .
(19:139-140)

A similar interpretation of the growth of meaning is expressed by Moore:

Meaning is knowledge; it is not a picture. It is a definite act of the mind. It has its duration. It has something akin to intellectual intensity; the brightness, the brilliancy of an intellectual insight. . . (17:330-331)

The importance of the meaning of the word in learning to recognize the printed form was made strikingly evident in certain experiments on learning nonsense words, in comparison with the learning of word forms which have meaning or to which meanings are given in the learning situation. Psychological studies, such as the Ebbinghaus experiments, show that the more clear and vivid the meaning of a symbol—such as a printed word—the more readily an individual is able to learn to recognize the symbol visually.

The successful mastery of language for the child as well as for the adult is closely associated with the meaning of words. The importance of acquiring the meaning of language is adequately expressed by Father Leen.

An initiation into a language implies two things, which in practice cannot be separated. It implies the acquisition of the power to handle intelligently the verbal signs proper to that language in the exercise of reading and writing; it brings with it as well an acquaintance with the thought expressed through verbal signs. (14:78)

An analysis of the meaning of "meaning," leads to the question: How are we to know that the child has a clear understanding of the meaning of the word? There has to be some standard that will determine this. This study considers two standards, the Stanford-Binet Vocabulary Test, and the Word Meaning of the Stanford Achievement Test. In experimental technique one constant is common in both; but, since one requires an oral response, and the other is a multiple-choice procedure depending on reading ability, many

variables are present. The description of the procedure which follows, attempts to analyze the constant in the light of the variables.

Method of Procedure

The fact that all important facts about each case were methodically arranged in the files of the Loyola Center for Child Guidance greatly facilitated the collection of data. The nature of the investigation necessitated not only the collecting of data pertaining to the vocabulary of the children, but also an understanding of educational and psychological factors that influence word meaning.

Such questions as the following were formulated: What is the mental capacity of the group? What factors are preventing the group from using mental capacity efficiently in the learning process? What other criteria besides intellectual capacity must be considered? Is achievement in line with the ability of the group? Answers to these interrogations required the tabulation of the following data: (1) chronological age, (2) mental age, (3) intelligence quotient, (4) present grade placement, (5) number of schools attended, (6) number of words defined on the Stanford-Binet Vocabulary Test, (7) number of words recognized on the Word Meaning of the Stanford Achievement Test, (8) Reading age and Reading grade indicated on the Word Meaning Test of the Stanford Achievement Test, (9) Reading age and Reading grade shown on the Paragraph Meaning of the Stanford Achievement Test.

Analysis or "diagnosis," to use clinical language, was the next step in the procedure. To facilitate the analysis, statistical methods, which are valuable summarizing or "shorthand" devices, were employed.

Chronological and mental age were arranged in a scatter-diagram, and the mean, median, standard deviation, range, 10th-90th percentile range were determined. Intelligence quotient, and schools attended were listed in a frequency table, and measures of variability and central tendency were determined.

Deviations from grade placement were computed from a Mental Age and Grade Expectancy Table, designed by Marion Monroe and used at the Chicago Bureau of Child Study. According to this table it is assumed that the average age for beginning first grade is six years; the average age for beginning second grade, seven years, etc. Deviations for both chronological age and mental age were determined from this chart. Thus, for example, one child in the fifth grade had a chronological age of 11 years and 10 months and a mental age of 6 years. The chart indicated chronological-age grade placement as the ninth month of sixth grade, and mental-age grade placement as the first month of first grade. According to his chronological-age grade expectancy, he shows a negative deviation of one year; mental-age grade expectancy indicates a positive deviation of four years.

To complement the former data, grade placement and vocabulary scores of the Stanford-Binet were correlated with mental age, chronological age, and intelligence quotient respectively.

The next step in the procedure was to compare the vocabulary of the Stanford-Binet with the Word Meaning of the Stanford Achievement Test. Since four forms of the latter had been administered, and only two were comparable in scores, three separate comparisons were necessary, namely: (1) the Stanford-Binet vocabulary with the Stanford Primary, Form D, (2) the

Stanford-Binet vocabulary with the Stanford Advanced, Form E, (3), the Stanford-Binet vocabulary with the New Stanford, Forms V and W. There were 57 cases in the first group; 14 in the second; and 122 in the third.

Three methods of comparison were used: correlation, measures of central tendency, and measures of variability. Following the advice of Broom (4) who suggests that it is best to compute not only the mean but also the median and to report both in any given frequency distribution, these two measures of central tendency were determined.

Since it is not enough to know the average measures for frequency distributions that are being compared, information also must be given as to their homogeneity. The standard deviation as a measure is very appropriate for this purpose. A standard deviation of large value, then, reveals a lack of normal consistency in the group. It indicates that the cases included in the aggregate tend to be heterogeneous rather than homogeneous.

CHAPTER IV

PRESENTATION AND INTERPRETATION OF DATA

The previously described procedure yielded results that require interpretation from many angles. In order to elucidate the major problem of this study, certain educational and psychological factors pertaining to the group as a whole have to be considered. These will be presented first.

Table I presents the chronological and mental age.

TABLE I

CHRONOLOGICAL AND MENTAL AGE OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Chrono- logical Age	Mental Age																Total
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
20									1								1
19										1							1
18				1													1
17						1		1			1			2			5
16					1		1	2	1	3	2		1	1	1		13
15					1	1	3	3		5	3	2		2	1	1	22
14			1	1		2	3	1	2	2	5		3	2	6		28
13				1	1		4	2	2	4	2	2	2				20
12	1			2		7	4	2	3	4	2						25
11		1	1	3	5	1		6	2		3	1					23
10	1			1	2	9	3	2	2		1					1	22
9				3	3	3	4	1									14
8		1		3	2	4	1										11
7	1		1	3													5
6			2														2
Total	3	2	5	18	15	28	23	20	13	19	19	5	6	7	8	2	193

As indicated in Table I, chronologically the group ranges from 6 to 20 years and mentally from 5 to 20 years. In any clinical study, mental and chronological ages are important factors. Chronological age is considered in the child's social development, but more important consideration is given to mental age, determined by the amount of mental ability manifested in the adjustment that life demands of him.

The scatter-diagram is one of the best ways of seeing at a glance the individuals whose mental development shows marked deviation from the normal. For example, twenty-two of the group have a chronological age of ten; two represent the extremes, the one having a mental age of five and the other a mental age of twenty. When comparing the chronological and mental age of the others, wide divergence is noticeable in many instances.

The following table gives the distribution of the intelligence quotients of the group.

TABLE II

DISTRIBUTION OF INTELLIGENCE QUOTIENTS OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Intelligence Quotients	Number	Intelligence Quotients	Number
190 - 199	1	110 - 119	34
180 - 189		100 - 109	35
170 - 179		90 - 99	23
160 - 169		80 - 89	31
150 - 159		70 - 79	17
140 - 149	5	60 - 69	7
130 - 139	13	50 - 59	4
120 - 129	22	40 - 49	1

According to the Terman (1916) classification, this group would be arranged as follows: 35, very superior; 34, superior; 59, normal or average; 31, dull; 17, borderline deficiency; 12, feeble-minded. An analysis of Table II reveals that 6 or approximately 3% are classified as genius, and 12 or approximately 6% belong to the feeble-minded. This group is not typical of the normal population (nor of a clinical population) since it deals only with those who take special achievement tests.

Table III shows the grade placement of the group.

TABLE III
GRADE PLACEMENT OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Grade	Number
12	1
11	1
10	15
9	22
8	20
7	24
6	22
5	25
4	25
3	16
2	10
1	3
Ungraded	9
Total	193

Table III reveals that 179 or 92% of the group are distributed between the second and tenth grades. The two cases in the 11th and 12th grades, respectively, were referred to the Center for vocational guidance.

One hundred eighty-four attended the various private high schools or the parish schools of the Archdiocese. The balance, from the Chicago public schools, are in ungraded divisions.

The records of the Center show a larger proportion of first-grade children referred for psychological service than is represented in this study. Although the Stanford-Binet was administered to each, some were given Gates Primary Reading Tests. Many who were non-readers were given the Metropolitan Readiness Test.

A list of the number of schools attended by the studied group is given in the following table.

TABLE IV

NUMBER OF SCHOOLS ATTENDED BY THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Number of Schools Attended	Number
9	2
8	4
7	5
6	3
5	10
4	17
3	31
2	50
1	71
Total	193

Loutitt (op. cit.) points out that school is not merely a place where the child goes to absorb a certain amount of knowledge; simultaneously with such activity, he has to learn to adjust to his teacher, classmates, teaching methods, and academic requirements of all sorts. Adjustment takes time; many children may require months, a semester, or a year. Every transfer demands a new adjustment. As indicated in Table IV, 122 or 61% of this group attended two or more schools. Many reasons for transferring were listed. The most common were: (1) poor adjustment, (2) repetition of grade, and (3) inability to adjust.

Table V presents chronological age in relation to grade placement.

TABLE V

CHRONOLOGICAL AGE IN RELATION TO GRADE PLACEMENT OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Negative Deviation from Grade Placement	119
No Deviation from Grade Placement	63
Positive Deviation from Grade Placement	2
Number in Ungraded Divisions	9
Total	193

Retardation, indicated in the above table as negative deviation, and acceleration, as positive deviation, were computed, as explained in Chapter III, from a Mental Age and Grade Expectation Table. A retardation or acceleration of one full year was considered the minimum in reckoning deviation.

As gleaned from this table, 63 or approximately one-third of the group, show normal grade placement. Sixty-one of the 119 who reveal a negative deviation were retarded one year; 43 show a two-year retardation; 9 and 5 deviate three and four years respectively. An intensive reading program was recommended for 84 of the group whose retardation was attributed to reading disability. Since in general, promotion is in accordance with chronological age, it is not surprising that only two are accelerated. The nine in the ungraded divisions attend public schools where special classes are available. These are listed separately, although it could be assumed that they are academically retarded.

The following table tabulates the mental age in relation to grade placement.

TABLE VI

MENTAL AGE IN RELATION TO GRADE PLACEMENT OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Negative Deviation from Grade Placement	110
No Deviation from Grade Placement	37
Positive Deviation from Grade Placement	37
Number in Ungraded Divisions.	9
Total	193

As was previously stated, since promotion is more in accordance with chronological age than with mental age, discrepancy in grading is less for the former than for the latter. Apparently this accounts for the fact that 110, who have the ability to work beyond their present grade placement, show

a negative deviation from grade placement, and 37, who have not the ability to do the work of their present grade placement, show a positive deviation.

Table VII indicates the measures of central tendency and variability of the chronological age, mental age, intelligence quotient, and grade placement.

TABLE VII

MEASURES OF CENTRAL TENDENCY AND VARIABILITY OF THE CHRONOLOGICAL AGE, MENTAL AGE, INTELLIGENCE QUOTIENT, AND GRADE PLACEMENT OF THE 193 CHILDREN REPRESENTED IN THE PRESENT STUDY

	No.	S.D.	Mean	Med.	Range	10th-90th Percentile Range
C.A.	193	2.79	12-2	12-3	6-20	8-16
M.A.	193	3.51	12-1	11-6	5-20	7-17
I.Q.	193	22.30	102.30	103.61	46-194	73-129
Grade	193	2.68	6.5	5.8	1-12	2-9

Table VII is, so to speak, a composite statistical analysis of Tables I, II, and III. A comparison of the measures of central tendency and variability of the chronological and mental ages reveals no striking variance. Upon inspection, the mean I.Q. suggests that the group is typical of the normal. However, the standard deviation, indicating that 68% of the group range between 80 and 124 I.Q., and the 10th-90th percentile range, showing that only 80% have I.Q.'s between 73 and 129, are not characteristic of a normal frequency-distribution curve.

Although Tables V and VI manifest to some extent the relationship between chronological age, mental age, and grade placement, they do not show the similarity or variability of that relationship. This is indicated in Table VIII,

which presents the correlation between grade placement and chronological age, mental age, and intelligence quotient respectively.

TABLE VIII

CORRELATION BETWEEN THE MENTAL AGE, CHRONOLOGICAL AGE,
AND GRADE PLACEMENT OF THE 193 CHILDREN REPRESENTED IN THE PRESENT STUDY

	No.	r
M.A. Vs. Grade Placement	193	.66 \pm .03
C.A. Vs. Grade Placement	193	.67 \pm .04

According to Table VIII, a substantial relationship exists between mental age and grade placement. A similar relationship is indicated in the correlation between chronological age and grade placement. The fact that 48 or 25% of the group show a retardation of more than two years appears to be a factor influencing the correlation.

Tables I to VIII tabulate facts that are fairly representative of the group. Tables IX to XII present comparative data of the vocabulary of the Stanford-Binet Scale and the Word Meaning of the various forms of the Stanford Achievement Tests, administered individually to the group. Prior to dividing the group according to the form of achievement test taken, the vocabulary scores of the Stanford-Binet Scale were correlated with the mental age. Table IX presents the relationship.

TABLE IX

CORRELATION BETWEEN THE MENTAL AGE AND THE VOCABULARY SCORES OF THE
193 CHILDREN REPRESENTED IN THE PRESENT STUDY

	No.	r
Mental Age Vs. Revised Stanford-Binet Vocabulary Scores	193	.84 ± .02

A glance at Table IX reveals a fairly high relationship between mental age and the vocabulary scores of the Stanford-Binet. This coincides with Terman (op. cit.) who claims that the correlation between mental age and the vocabulary of the scale for single age groups range from .65 to .91 with an average of .81.

Three standards are used to compare the vocabulary of the intelligence scale with the word meaning of the achievement test, namely: measures of central tendency, variability, and correlation. The former two are illustrated in Table X.

TABLE X

MEASURES OF CENTRAL TENDENCY AND VARIABILITY OF THE VOCABULARY SCORES OF THE
REVISED STANFORD-BINET TEST AND THE WORD MEANING SCORES OF THE VARIOUS
FORMS OF THE STANFORD ACHIEVEMENT TEST ADMINISTERED TO THE
193 CHILDREN REPRESENTED IN THE PRESENT STUDY

Test	No.	Mean	Median	S.D.	Range	10th-90th Percentile Range
Stanford-Binet	57	10.07	9.89	3.42	3-17	5-15
Stanford Primary, Form D	57	12.75	10.30	9.75	2-39	4-29
Stanford-Binet	14	20.21	20.30	5.10	13-25	9-23
Stanford Advanced, Form E	14	26.95	21.00	12.60	10-47	6-45
Stanford-Binet	122	16.75	16.45	5.60	5-30	9-24
New Stanford, Forms V and W	122	40.50	39.45	19.90	1-74	15-68

As indicated in this table, the means and medians of the Stanford-Binet are similar. A comparison of the means and medians of the Stanford Achievement Tests shows the largest discrepancy in the Stanford Advanced, Form E. In comparing the mean vocabulary of the Stanford-Binet Scale and the mean word meaning of the various forms of the Stanford Achievement, the greatest variability is in the New Stanford, Forms V and W. The standard deviations of the three achievement tests are all larger than those of the intelligence test. All three groups defined less words on the Stanford-Binet Scale than they did on the Stanford Achievement Test. Reasons for differences are obvious, since procedures of the two tests are basically different.

In order to clarify the comparative data presented above, several factors have to be considered. For example, the children who were given the Stanford Primary can be classified into three distinct groups. In the first are those who belong to the normal primary group. The second group is composed of feeble-minded children with an estimated primary grade achievement level. The third group comprises children of average and higher mentality, who show notable reading deficiency.

The older children to whom the Advanced E Test was administered were referred to the clinic principally because of behavior difficulty or for vocational guidance.

Those to whom the New Stanford Test was given, being a larger random sample, are more representative of a clinical population. Therefore, in the pages that follow, primary attention will be given to this group, although material concerning the other groups is presented for a complete picture.

Table XI tabulates the correlation of the vocabulary of the Stanford-Binet Scale and the Word Meaning of the various achievement tests.

TABLE XI

CORRELATION BETWEEN THE VOCABULARY SCORES OF THE REVISED STANFORD-BINET TEST
AND THE WORD MEANING OF THE VARIOUS FORMS OF THE STANFORD
ACHIEVEMENT TEST OF THE 193 CHILDREN
REPRESENTED IN THE PRESENT STUDY

Tests	No.	r
Stanford-Binet Vs. Stanford Primary, Form D	57	.37 [±] .11
Stanford-Binet Vs. Stanford Advanced, Form E	14	.76 [±] .11
Stanford-Binet Vs. New Stanford Forms V and W	122	.81 [±] .02

As shown in this table, some relationship is evident between the vocabulary of the Stanford-Binet and the Word Meaning of the Stanford Primary, Form D. Although the Primary Form is primarily intended for the children of the primary grades, as stated previously, the psychologist ordinarily gave this form to any child, regardless of age or grade placement, who showed serious retardation on the Gray Oral Reading Paragraphs. The results of the oral reading test showed that 51 of the 57 who took the Primary Achievement Test were reading on the first, second, or third grade level. The balance were reading on the fourth grade level. Judging from these figures, reading retardation probably accounts for the low correlation, although unknown factors may also be contributing. The nature of the sample prevents the attaching of too much importance to this correlation.

As indicated in Table XI, a substantial relationship exists between the vocabulary of the Stanford-Binet Scale and the Word Meaning of the Stanford Achievement Test, Form E. Since only 14 cases are represented in this group, the statistical significance of the figures presented is of course negligible.

A fairly high correlation exists between the vocabulary of the Stanford-Binet Scale and the Word Meaning of the group who took the New Stanford Achievement Test. This group, as will be shown in Table XII, seemed more representative of a random sample, at least of a child clinic population.

Further comparative data about this latter group are presented in Table XII. This table tabulates the correlation of the chronological age and mental age with grade placement, reading grade of paragraph meaning, and reading grade of word meaning respectively.

TABLE XII

CORRELATION BETWEEN CHRONOLOGICAL AGE, MENTAL AGE, AND GRADE PLACEMENT
CHRONOLOGICAL AGE, MENTAL AGE, AND READING AGE OF PARAGRAPH MEANING,
CHRONOLOGICAL AGE, MENTAL AGE, AND READING AGE OF WORD MEANING
OF THE 193 CHILDREN REPRESENTED IN THE PRESENT STUDY

	No.	r
C.A. Vs. Grade Placement	122	.57 ± .06
M.A. Vs. Grade Placement	122	.58 ± .06
C.A. Vs. Reading Grade of Paragraph Meaning	122	.36 ± .08
M.A. Vs. Reading Grade of Paragraph Meaning	122	.79 ± .08
C.A. Vs. Reading Grade of Word Meaning	122	.47 ± .07
M.A. Vs. Reading Grade of Word Meaning	122	.74 ± .02

Table XII presents a composite picture of the group who took the New Stanford. Chronologically, this group ranges from 6 to 20 years and mentally, from 7 to 20 years. Grade placement extends from 2 to 10.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this investigation was to compare the vocabulary of the Revised Stanford-Binet Intelligence Test with the Word Meaning of the Stanford Achievement Test, the former requiring an oral response to each word presented, the latter, a printed multiple-choice procedure depending upon reading ability. These tests had been administered individually to a selected group of children referred for psychological service to the Loyola Center.

Educational and psychological information about the group were collected from the files of the Loyola Center for Child Guidance. The data were arranged in tables. To show the relationship between the vocabularies, correlation, measures of central tendency and measures of variability were used.

In this study no attempt has been made to generalize beyond the limits justified by the evidence presented. The conclusions apply only to this group.

In summarizing the results, it may be advisable to heed the warning of Freeman (8) regarding the caution necessary in interpreting the results of correlation even though the most reliable statistical methods are used. Harmon (op.cit.) claims that at times refined statistical analysis with correlation coefficients and other indices giving an appearance of exactness and scientific precision may be false and misleading. Since statistics

represent quantitative data, one way of counteracting misrepresentations is to describe the relationship or nonrelationship in terms of qualitative data related to the investigation. In this study the qualitative data were educational and psychological factors influencing the achievement of the group.

An analysis of the reading disability of the group to whom the Stanford Primary, Form D was administered, indicated that 53 per cent were severely retarded, showing from three to five years deficiency in both silent and oral reading. A study of the individuals in the group further revealed that many were given special diagnostic tests, followed by intensive remedial work.

The educational factor of non-promotion showed further evidence about the reading problem. Sixty-one percent of the group repeated at least one of the primary grades. Since reading disability is one of the principal reasons why children are retained, it is highly probable that this group was no exception to the rule.

Reading disability was further evidenced in the fact that the psychologists, recognizing the reading retardation of the children, administered primary tests in preference to intermediate or advanced reading tests.

Relying only upon the above facts, one might conclude that reading disability probably influenced the vocabulary scores. However, a careful analysis showed that the group to whom the Stanford Primary, Form D was administered could be classified into three divisions. In the first were those who belonged to the normal primary group. The second group was composed of older feeble-minded and border-line children with an estimated primary grade achievement. The third group comprised children of average and high mentality who showed notable reading deficiency.

To conclude that because the third division showed reading deficiency the vocabulary of the entire group was affected, would be illogical.

The nature of the sample to whom the Stanford Advanced, Form E was administered prevented the attaching of too much importance to the educational and psychological factors influencing the group.

Those to whom the New Stanford Test was given, being a larger random sample, were more representative of a clinical population. However, the wide range of mental and chronological ages, and scholastic achievement, made it impossible to reach any definite conclusions concerning the influence of reading upon the vocabulary scores of the group.

Turning to the more qualitative aspects recorded in the case histories by the psychologists who administered the tests, it seems that certain psychological factors, such as emotional strain, inhibited some of the children's oral response on the Binet. Retarded readers, trying to "decipher words" on the achievement test also exhibited emotional stress. Naturally, the statistical data of the study fail to describe the behavior of the children, and yet these reactions form an integral part of the children's mode of response.

The most important outcome of this study was a realization that the inadequacy of the collected data is compensated by the fact that each child when referred to the Loyola Center had received individual attention. His assets and liabilities were both considered by the psychologist who administered the tests. Each child had been studied from many points of view. Physical and mental endowment, as well as social, emotional, and moral capa-

bilities were and are synthesized in every case studied at the Loyola Center for Child Guidance. Finally, as a Catholic agency its methods of treating and correcting conduct disorders and other maladjustments, takes into account the true nature of the child and the importance of supernatural helps.

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APPROVAL SHEET

The thesis submitted by Sister Mary Patrice McGlone, O.S.F. has been read and approved by three members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the thesis is now given final approval with reference to content, form, and mechanical accuracy.

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

March, 1945
Date

Charles L. Day, Jr.
Signature of Adviser