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The Relationship of First Grade Readiness to Third Grade Achievement

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THE RELATIONSHIP OF FIRST GRADE READINESS TO THIRD GRADE ACHIEVEMENT

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CHAPTER I

INTRODUCTION TO THE PROBLEM

Reading has been recognized by every generation of our nation's history as the most important subject taught in the American schools. However, this last half-century stands out as the golden period in the progress of reading.

To understand the present practices and philosophies of modern-day reading curriculum and methodology, the educator must regress fifty years and follow the progress that has been made in reading beginning with the early decades of the twentieth century.

The first dramatic breakthrough in reading progress was initiated in 1910 with the publication of Thorndike's handwriting scale which has been recognized as "the beginning of the contemporary movement for measuring educational products scientifically."[1]

In the immediate, ensuing years, scales and tests appeared rapidly which resulted in a new surge of interest in placing education on a scientific basis together with its correlative motives for developing instruments of measurement. The concept of applying scientific techniques to the study

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[1]Walter B. Barbe, Teaching Reading: Selected Materials (New York: Oxford University Press, 1965), p. 38.

of reading consequently led to the development of standardized instruments to measure reading achievement and increased the number of studies on problems pertinent to reading. It was also during this decade that the concept of silent reading was initiated.

The height of this last-century's golden era of reading progress occurred during the decade extending from 1920 to 1930. The scientific movement preceding this decade opened up new avenues of improving and extending applications in fundamental reading practices. The areas of silent reading, individual differences, and the new concept termed remedial reading, were significantly influenced by the testing and studies of the era.

Another mark of progress claimed by this decade of the twenties was the concept of reading readiness. In 1926 the International Kindergarten Union in cooperation with the U. S. Bureau of Education conducted an investigation of "Pupil's Readiness for Reading Instruction upon Entrance to First Grade"; in 1928 Wm. Gray reported on three studies of reading readiness; and a few articles and master's theses were written on the subject. Although still in the formative stage, reading readiness was initiated and the movement was on its way.

The periods of the 1930's through 1960 were characterized by continuing investigations, the transfer of remedial

activities from the laboratory to the classroom, reading at higher levels, reading in content subjects, individualized instruction, and the recognition that a relationship exists between child growth and development and reading. The studies involving this last area have been influential in establishing the fundamental concepts which comprise the basis for our present-day readiness programs.

The teaching of reading has never held a more prominent place in the school curriculum than it does today. Our emergence into the age of space has developed a demand for more and better education of all our nation's children. To achieve such an objective, educators must consider the concept of readiness which influences the degree to which a child will benefit from his experiences during his first years in school.

The factors directly relating to a child's readiness, as stated by Mazurkiewicz,[2] have been recognized as:

1. Facility in the use of oral language.
2. Genuine motivation to learn.
3. Prereading experiences.
4. Interest in books.
5. Chronological age.

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[2]Albert J. Mazurkiewicz (ed.), New Perspectives in Reading Instruction (New York: Pitman Publishing Corp., 1964), pp. 138-139.

6. Social adjustment.
7. Mental maturity.
8. Perception of relationships.
9. Memory span.
10. Hearing.
11. Auditory discrimination.
12. Visual efficiency.
13. Visual discrimination.
14. Emotional adjustment.
15. General health status.
16. Sex differences.

With such a wide range of physiological, neurological, and psychological factors that are interrelated in many respects, it is questionable how judgment on a child's readiness can be determined. Although there are various methods used in such evaluations, the reading readiness tests--which generally "measure physiological maturity, comprehension of the spoken language, ability to perceive similarities and differences, ability to follow directions, and the ability to draw simple figures"[3]--are the most widely used forms of evaluation.

"Since the chief objective of the reading readiness test is the prediction of success in learning to read, it is

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[3]Arthur W. Heilman, Principles and Practices of Teaching Reading (Columbus, Ohio: Charles E. Merrill Books, Inc., 1967), p. 28.

hoped that the test separates the ready child from the non-ready."[4] This assumption raises the question of how accurately reading readiness tests predict success in beginning reading. The purpose of this paper is to investigate this question.

Need for the Study

There is a need for better understanding of what present readiness tests measure. Administrators frequently use the test data to group children heterogeneously or homogeneously in first grade classes. Such practices assume that the tests accurately predict the rate of academic growth the child will make in the future. Teachers commonly use readiness test scores as a basis in forming reading groups within the class. Consequently, a child's achievement may be inhibited by circumstances other than a lack of readiness. "There is a need to develop valid instruments which schools can use to evaluate the readiness levels that have been achieved by their pupils."[5] Research studies must determine the validity of our present readiness tests in predicting reading achievement. In so doing, individual differences may be more efficiently met.

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[4] Ibid.

[5] Robert Karlin, "Prediction of Reading Success and Reading Readiness Tests," Elementary English, XXXIV (May, 1957), p. 322.

Statement of the Problem

"The concept of readiness, which generally consists of characteristics which contribute to one's ability to profit from instruction, has gained wide acceptance among elementary school teachers and administrators."[6]

The methods of appraising a child's readiness to profit from school experiences are a primary concern of kindergarten and primary teachers. Standardized tests have been developed to assist the appraisal of readiness for first grade. The contents of this paper will study the possibility of using readiness test data to predict future reading achievement.

Hypothesis

Mental, social, physical, and emotional maturity determine one's ability to benefit from formal instruction. However, maturation in each area may develop at variable ages and in varying degrees. Therefore, can the prediction of one's achievement be made one year, two years, or three years prior to his experience in a specific area?

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[6]Albert J. Kingston, "Relationship of First Grade Readiness to Third-and-Fourth Grade Achievement," Journal of Educational Research, LVI (October, 1962), p. 61.

Hypothesis. There can be no significant correlation made between an individual's readiness test scores and his reading achievement in the third grade.

An Approach to the Solution of the Problem

A possible solution to the problem of determining the validity of readiness test scores in predicting achievement in reading was conducted in the following manner:

A random selection of twenty beginning fourth grade children enrolled in the Buzzard Laboratory School, located at Eastern Illinois University in Charleston, Illinois, was made. Special permission from the school's central office granted the utilization of confidential, statistical data from each child's cumulative folder. Each child selected had been administered the Lee-Clark Readiness Test prior to first grade training; the Iowa Test of Basic Skills had been administered in the latter part of grade three.

The test data obtained would be analyzed through statistical computation using the Pearson product-moment correlation coefficient.

Definition of Terms

Reading readiness. Characteristics of a pupil, such as mental ability, emotional stability, and physical health, which seem to contribute to his ability to profit from instruction in reading.

Reading readiness tests. Standardized tests which evaluate the maturity of a child through a series of "written" exercises. They are used to determine the child's ability to benefit from reading instruction.

Academic achievement. Knowledge and/or skills which are developed in a specific school subject usually determined by test scores.

Achievement test. A test which measures skills, knowledges, and understandings of a specific school subject.

Lee-Clark Readiness Test. A twenty-minute test involving letter and word symbols and concepts which is administered to children prior to formal instruction in first grade.

Iowa Basic Skills Test. An achievement test which measures the child's knowledge and skills in the areas of reading, language, word study, and arithmetic.

Coefficient correlation. The relationship between two or more sets of data which usually vary from +1 through 0 to -1.

Coefficient correlation, Pearson product-moment. A statistical process which expresses the degrees of relationship between two sets of data. The technique is more thoroughly discussed in Chapter IV.

Mental Age. Mental growth that has been achieved.

CHAPTER II

RELATED RESEARCH

Philosophers have long acknowledged the importance a child's preschool years play in shaping his attitudes, behavior, and intelligence for future years.

Educators in history, such as Friedrick Froebel, Dr. Maria Montessori, Elizabeth P. Peabody, and Susan E. Blow, have recognized the importance of developing readiness in preschool children which will enable the child to achieve more readily when formal instruction is encountered. Although their methods of doing so varied, they shared a common objective--to develop attitudes, appreciations, and behavior patterns within the child which will enable him to live successfully in the society of which he is a member.

Today, it is an accepted fact in education that many complex factors, such as "mental development, verbal facility, physical health and development, personal and social adjustment, interest patterns, and amount and kinds of information picked up through experience,"[1] interact with each other to greatly influence the child's educational progress. A child's readiness to learn, therefore, depends

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[1]Miles A. Tinker and Constance M. McCullough, Teaching Elementary Reading (New York: Appleton-Century-Crofts, Inc., 1962), p. 53.

upon maturation, experience plus verbal facility, and adjustment.

Educational psychologists have listed significant principles of readiness as the following:

1. Children generally become ready for specific learning tasks at different ages.
2. The child develops skills most readily if they are built on the natural foundation of maturational development.
3. Children should not be forced into readiness training before maturational development is adequate.
4. Generally, the more mature the child is, the less training is needed to develop a proficiency.
5. The teacher can promote the child's readiness by providing experiences which will lessen the gaps in his background.[2]

Numerous tests have been devised to assist educators in appraising the degree to which a child has attained a readiness for reading. They attempt to measure the more important abilities involved in beginning reading. It is questionable, however, whether data derived from administered test materials would validly predict a child's future success in reading achievement.

Studies relating to this question are described in this chapter, in chronological order, with emphasis given to the

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[2]Henry P. Smith and Emerald V. Deschant, Psychology in Teaching Reading (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1961), pp. 127-128.

areas of readiness and mental age in correlation with future reading success.

Reading Readiness as Related to Reading Achievement

In 1935, Lee and Clark, shortly after authoring their reading readiness test, chose schools in California and Colorado to validate their test and to determine its relationship in predicting success in reading. One hundred and sixty-four students were tested at the beginning of first grade with the Lee-Clark Reading Readiness Test. During the latter part of the year, the Lee-Clark Reading Test was administered in addition to the Detroit First Grade Intelligence Test and the Pintner-Cunningham Intelligence Test. Although the correlation of the Lee-Clark Reading Readiness was only .49 in relationship to reading achievement, the correlated results were higher than those relating to a correlation between intelligence and achievement. The authors concluded that "the reading readiness test appeared to be superior to an intelligence test in predicting future reading."[3]

A study entitled, "Predicting First Grade Reading Achievement," conducted by Charles D. Dean in 1936, attempted to determine the value of readiness test data in

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[3]J. Murray Lee, W. Willis Clark, and Dorris Lee, "Measuring Reading Readiness," Elementary School Journal, XXXIV (May, 1934), p. 666.

predicting a child's future reading achievement. Scores from the Metropolitan Readiness Test and the Metropolitan Reading Test were obtained from 116 first grade children. The results showed a Pearson product-moment correlation coefficient of .590. Dean concluded that "the correlation (between readiness and reading achievement test data) was high enough to seem to have special significance (in using readiness scores) as a predictive instrument."[4]

The variables of mental age, reading aptitude, and reading achievement were correlated in a study conducted by S. Roslow in 1939. The population for the test involved 109 children from Hastings-on-the-Hudson School in New York. During the first month of school, the children were administered the Monroe Reading Aptitude Test which was followed in the latter part of the year by the Gates Primary Reading Test measuring word recognition, sentence reading, and paragraph reading. The Pearson product-moment correlation coefficient was computed to be .520, a positive relationship between readiness test scores and reading achievement.

The Robinson and Hall analysis of correlations between reading readiness tests and reading achievement scores was conducted in 1942 using a series of test batteries. Although they found a correlation of .58 between reading readiness tests and reading achievement scores and concluded that

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[4]Charles D. Dean, "Predicting First Grade Reading Achievement," Elementary School Journal, XXXIX (October, 1939), p. 619.

"reading readiness tests tend to yield highly reliable measures which fairly well predict success in learning to read,"[5] they could not recommend one specific battery of readiness tests being a consistently better predictor than another.

Although educators generally relate the predictive value of readiness test results with success in reading during the primary years, Moreau, in 1944, studied the long range predictive value of reading readiness test data. Finding a correlation of .46 between reading readiness test scores and sixth grade achievement, he drew the conclusion that "reading readiness tests given during the first month of the first grade predict reading achievement up to the sixth grade nearly as well as they do achievement in the first grade."[6]

In the fall of 1945, Wm. Kottmeyer conducted a study in St. Louis, Missouri, involving 3,115 first-grade Negro and white children. In September, the children were administered the Metropolitan Reading Readiness Tests which were correlated in May with the results of the Gatts Primary Reading Tests. They showed a relationship of .46 in predicting a child's success in reading.

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[5]Tinker and McCullough, op. cit., p. 80.

[6]Ibid., p. 81.

In 1954, the practice of using readiness test results to determine the group placement of children was criticized by Robert Karlin. He began a study to determine the correlation between readiness and reading achievement test scores. The Metropolitan Readiness Test (Form R) was administered to 111 first-grade children; the following year, they were given the Gates Primary Reading Test at the end of the second grade. The Pearson product-moment correlation coefficient of the above data was .360, with a standard error of .08. Karlin concluded that the relationship of the two sets of data was relatively small and that it is "virtually impossible to predict from readiness scores how well any child in the sample will do on the reading achievement test."[7]

Blythe C. Mitchell investigated the predictive validity of the Metropolitan Readiness Tests against the 1959 Revision of the Metropolitan Achievement Tests. During the month of September, 1959, the readiness test was administered to 919 white pupils of an entire Virginia county; the achievement tests were administered the following May (1960). The Pearson product-moment correlation coefficient of the total Metropolitan Readiness Test showed a correlation of .578 with the average reading test results. Correlations

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[7]Robert Karlin, "Prediction of Reading Success and Reading Readiness Tests," Elementary English, XXXIV (May, 1957), p. 322.

of the total Readiness score as a predictor with achievement on each of the four subtests of the Metropolitan Achievement Tests as the criteria ranged from .51 to .63. Mitchell concluded, "the Readiness tests would appear to be a useful instrument in determining the degree of readiness for first-grade learning."[8]

Neville Bremer's study involving a group of 2,069 first graders proposed to investigate the validity in using the readiness test data as a predictive instrument in reading achievement. Data from the Metropolitan Readiness Test (Form R) administered in kindergarten was correlated with the reading test scores obtained from the Gray-Votaio-Rogers Achievement Test (Form Q) two years later. The Pearson product-moment correlation coefficient was computed to be .400 with a standard deviation of .026. Although the results show a slight correlation, Bremer concluded that "readiness tests cannot be used to predict reading achievement with any degree of accuracy."[9]

In 1960, Marvin Powell and Kenneth M. Parsley conducted a study of 863 first graders. The purpose of this study was to investigate relationships between the Lee-Clark Readiness

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[8]Walter B. Barbe, Teaching Reading: Selected Materials (New York: Oxford University Press, 1965), p. 93.

[9]Neville Bremer, "Do Readiness Tests Predict Success in Reading?" Elementary School Journal, LIX (January, 1959), p. 224.

Test and the California Reading Test administered in the second grade. The accumulated test data showed a correlation of .820. The authors concluded that "from the data, the Lee-Clark Readiness Test would seem to be useful as a predictor of general reading achievement test results."[10]

The hypothesis of the Albert Kingston study, in 1961, theorized "that high readiness would reflect higher scholastic achievement in grades three and four."[11] A group of 272 beginning first-grade children were administered the Metropolitan Readiness Test; the Stanford Achievement Test was administered to the group when they entered fourth grade. The Pearson product-moment correlation was .262. The author concluded that "the prediction of third-grade achievement for individual pupils based on their first-grade readiness scores is not feasible."[12]

Louise B. Ames and Richard N. Walker conducted a study in 1963 to determine the validity the Rorschach kindergarten test scores had in predicting fifth grade reading achievement. The correlation of .530 supported the author's contention

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[10]Marvin Powell and Kenneth M. Parsley, Jr., "The Relationship Between First Grade Reading Readiness and Second Grade Reading Achievement," Journal of Educational Research, LIV (February, 1961), p. 233.

[11]Albert Kingston, "Relationship of First Grade Readiness to Third-and-Fourth Grade Achievement," Journal of Educational Research, LVI (October, 1962), p. 67.

[12]Ibid., p. 67.

that "the Rorschach test, administered before the start of formal reading instruction, can be useful in predicting individual differences in reading skills."[13]

Similar studies involving a correlation between reading readiness tests and reading achievement scores showed similar positive correlations. In 1936, Wright found a correlation of .61 between Metropolitan Readiness Tests and Gates Primary Reading Tests; Senour surveyed 80 cases in 1935 to find a correlation of .538; in 1936, Craig studied 63 cases, resulting in a .57 between the two variables; and Willmore's study of 82 cases resulted in a correlation of .49.

The research surveys on the reliability of readiness tests as predictive instruments show broad variations in correlations (note Table 1). The size of the study population surveyed, the grade levels correlated, the type of testing instruments administered, and the various methods of instruction used may have influenced the range of relationships between each study.

Mental Age as Related to Readiness and Achievement

Closely related to and an important determinant of reading readiness and achievement is the factor of mental

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[13]Louise B. Ames and Richard N. Walker, "Prediction of Later Reading Ability from Kindergarten Rorschach and I.Q. Scores," Journal of Educational Psychology, LV (December, 1964), p. 313.

TABLE 1

RESULTS OF STUDIES MADE TO DETERMINE THE CORRELATION BETWEEN READINESS AND READING ACHIEVEMENT TEST SCORES

Author(s)	Year	Student Population	Grade Levels Involved	r[a]
Lee-Clark	1935	2,000	Pre-1 & 1	.49[b]
Dean	1936	116	Pre-1 & 1	.590[c]
Roslow	1939	109	Pre-1 & 1	.710[d]
Karlin	1954	111	Pre-1 & 2	.360[e]
Bremer	1957	2,069	Pre-1 & 2	.400[f]
Powell & Parsley	1960	863	Pre-1 & 2	.820[g]
Kingston	1961	272	Pre-1 & 3-4	.262[h]
Ames & Walker	1963	54	Pre-1 & 5	.530[i]

[a]The Pearson product-moment correlation coefficient.

[b]Lee-Clark Reading Readiness and the Lee-Clark Reading Test.

[c]Metropolitan Readiness Test and the Metropolitan Reading Test.

[d]Monroe Reading Aptitude and the Gates Primary Reading Test.

[e]Metropolitan Readiness Test and the Gates Primary Reading Test.

[f]Metropolitan Readiness Test and the Gray . . . General Ach. Test.

[g]Lee-Clark Readiness Test and the California Reading Test.

[h]Metropolitan Readiness Test and the Stanford Achievement Test.

[i]Rorschach Test and the Stanford Achievement Test.

age. An investigation of such a relationship was first conducted in 1928 by the Winnetka (Illinois) Public School System. The Department of Educational Council was disturbed by the number of first grade children who were discouraged in reading. The research department, having noted a relationship between a child's mental age and his progress in reading, set up an investigation commonly referred to as the Morphett and Washburn Study, to determine the period in the mental development of the child when, as a rule, there is the best chance for learning to read readily.

Consequently, in the autumn of 1928, all of the first-grade children (141) were given the Detroit First Grade Intelligence Test. The teachers were not told the mental ages of the children, and they were encouraged to use their own individual technique of teaching. The child's progress was determined by his rate of advancement through a 21-step teaching unit plus a score on identifying 139 sight words. During the latter part of the year, the Stanford Revision of the Binet-Simon Scale was administered. The study found a fairly high correlation (.50 to .65) between mental age and ability to learn; the Detroit First Grade Intelligence Test results correlated higher with reading progress; the children who had achieved a mental age of six years and six months on the Detroit First Grade Intelligence Test made better progress than the less mature child. It was concluded that

"postponing the teaching of reading until the child is 6-1/2 can greatly decrease the chances of failure and disappointment."[14]

Arthur I. Gates' study (1937) entitled, "The Necessary Mental Age for Beginning Reading," related to the previous study of Morphett and Washburn on mental age. It also considered the importance of procedures, materials, and quality teaching in determining the reading success of a group. Four separate studies were conducted to determine the relationship the areas listed above had with reading success.

The first study was conducted with 78 first grade students enrolled at the State Teachers College Laboratory School in Indiana, Pennsylvania. The teachers were given the freedom to use the modern materials and techniques of their choice; their instruction was geared toward individual differences. Their reading achievement was measured at the end of the year by three Gates Primary Silent Reading Tests; the results were correlated with the child's mental age (5.0) derived from his intelligence test score. The results showed a correlation of .62 between the child's mental age and his average reading achievement grade.

The second study was conducted with 48 pupils in New York City using expert teachers and materials. Only

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[14]Mabel V. Morphett and Carleton Washburn, "When Should Children Begin to Read?" Elementary School Journal, XXXI (March, 1931), p. 503.

students who began with a mental age of 5.5 or above were considered. It was found that only 3 percent fell below the 1.5 grade level; 9 percent fell below the 1.75 level; and 12 percent fell below the 1.95 level. The correlation between mental age and the reading achievement grade was .55.

The third study was conducted in a superior urban public school utilizing above average teachers and materials. Forty-three pupils with a mental age of 6.0 or above were involved. The correlation of mental age with reading achievement was .44; 5 percent of the group fell below 1.5 grade level; 10 percent fell below 1.75; and 20 percent fell below 1.95.

Gates' fourth and final study involved 80 pupils from two metropolitan public schools. The teachers, methods, and materials were inferior. When administered the reading achievement tests, a large portion of the children with a 6.0 mental age fell below the 1.5 and 1.75 grade level; of the pupils with a 6.5 mental age, 8 percent achieved below 1.50; 16 percent achieved below 1.75; and 36 percent achieved below 1.95. The correlation between mental age and reading achievement was .34.

Gates concluded "that statements concerning a specific mental age at which a pupil can be interested to learn to read are essentially meaningless."[15] The age for learning to

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[15]Arthur I. Gates, "The Necessary Mental Age for Beginning Reading," Elementary School Journal, XXXVII (March, 1937), p. 508.

read under one program or with one method may be entirely different from that required under other circumstances. However, "mental age should be taken into account,"[16] along with the child's background and aptitudes, when establishing a program to meet the needs of a particular group of children

In 1939, Wilson, et. al., presented evidence that readiness to learn letter forms and sounds correlates highly with achievement in learning to read. The Wilson study was initiated in the fall of 1933, involving 25 students from the Horace Mann School in New York. In September, the Metropolitan Reading Readiness Test, the Van Wagener Reading Readiness Test, and the Stone and Grover Classification Test for Beginners in Reading were administered to all the children. In December, the Gates Reading Diagnosis Test was given individually, followed in January by the Gates Primary Reading Test and the Hildreth First Grade Reading Analysis Test. Other measures and appraisals (totaling 106 in all) were obtained covering the child's scholastic, physical, psychological, and social development.

Using the Pearson product-moment correlation coefficient in relating the variables of mental age with word recognition and small letter forms, the following

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[16] Ibid.

correlations resulted: in the autumn, a correlation of .61; in the spring, a correlation of .74.

The study concluded that "reading readiness is in reality reading progress which covers two aspects--skill or mechanics and interest."[17]

When measuring mental age separately from readiness, does one measurement prove more reliable than the other in predicting reading success?

Fendrick and McGlade conducted a study in 1938 to determine the most reliable instrument in predicting reading success. Although little variation was found in the predictive value of data resulting from reading readiness tests and mental test scores used independent of each other, a high correlation of .94 resulted when the mental tests and the reading readiness test scores were combined and correlated with the child's reading progress. They concluded that "a critical utilization of both tests enhances their significance for prediction of first-grade accomplishments."[18]

Studies are currently being conducted to give educators a more reliable solution to the problem of which this study relates.

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[17]Frank T. Wilson, et al., "Reading Progress in Kindergarten and Primary Grades," Elementary School Journal, XXXVIII (February, 1938), p. 449.

[18]Lillian Gray and Dora Reese, Teaching Children to Read (New York: The Ronald Press Co., 1957), p. 87.

CHAPTER III

METHODS AND PROCEDURES

It has been postulated that readiness test scores are not reliable indicators of successful reading achievement. To prove the stated hypothesis, 20 cumulative files were randomly selected from a group of 40 beginning fourth grade students enrolled at Buzzard Laboratory School on the campus of Eastern Illinois University located in Charleston, Illinois, a midwest community of approximately 14,000 population.

The test records of each child indicated that the 1962 Revision of the Lee-Clark Reading Readiness Test for Kindergarten and Grade I, written by Murray Lee and Willis Clark and published by the California Test Bureau, had been administered to the group during the latter part of kindergarten. The primary objective of this test is to predict a child's ability to learn to read.

Part I, a test on letter symbols, consists of 12 items with two letters each. The child is to match letters in the first column with corresponding letters in the second column. This test measures the child's ability to discern similarities in letter forms.

Part II, a test also on letter forms, consists of 12 items, each with four letters, and measures the child's ability to perceive differences in letter forms.

Part III, a test on concepts, comprises 20 picture items. The child is directed to mark a specific picture in each row. The objective of this test is to measure the child's oral vocabulary, his understanding of concepts, his ability to follow directions, and his knowledge of meanings.

Part IV, involving word symbols, consists of 20 items with five words or letters in each. The child must be able to recognize the stimulus word or letter symbol among the four responses. This test measures the abilities to recognize differences and likenesses in letter and word formations.

The coefficients of reliability for the test ranged from .87 to .96; the coefficients of validity ranged from .35 to .71.

The authors suggested that the "test scores be interpreted in three ways: (1) grade placement, (2) expectation of success rating, and (3) indication of months of delay before formal reading."[1]

During the latter part of third grade, the Iowa Test of Basic Skills, written by E. F. Lindquist, et al., and

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[1]J. Murray Lee and Willis W. Clark, Lee-Clark Reading Readiness Test Manual (Los Angeles: California Test Bureau, 1931), p. 7.

published by Houghton Mifflin Co., was administered to determine the extent of academic achievement the child had attained during the year. The Iowa Test of Basic Skills for grades three through nine is a battery of 15 tests which measure the child's efficiency in five areas--vocabulary, reading comprehension, language, word skills, and arithmetic. Only the scores from the vocabulary and comprehension subtests were used in this study. The vocabulary test requires that the child identify one of four words that has most nearly the same meaning as the word in heavy black type printed above the selection; the reading comprehension test consists of several reading selections which are followed by questions and a choice of four possible answers to be selected as the correct response to the question.

The scores from Test I (vocabulary) and Test II (comprehension) of the Iowa Test of Basic Skills were averaged to obtain a median reading grade level score for each child.

The Pearson product-moment coefficient correlation was applied to the data to obtain the relationship between the two sets of test scores.

CHAPTER IV

STATISTICAL ANALYSIS OF THE DATA

Readiness test data and reading achievement test scores administered in the third grade were obtained from the cumulative folders of 20 beginning fourth grade students.

The 20 individual scores were listed randomly in pairs (note Table 2). The X scores represent the test scores of the Lee-Clark Readiness Test administered in kindergarten; the Y column represents the scores obtained from the Iowa Test of Basic Skills. The individual scores in columns X and Y were "squared" and noted in the columns marked X^2 and Y^2. The final column represents the product of the individuals' readiness test scores and the reading achievement score from grade three. To determine the relationship between the two sets of scores, the Pearson product-moment correlation coefficient was applied. The formula used was:

$$r = \frac{\frac{\Sigma XY}{N} - \overline{XY}}{S_x S_y}$$

To determine the standard deviations of columns X and Y (S_x and S_y) the following formulas were used:

$$S_x = \sqrt{\frac{\Sigma X^2}{N} - \overline{X}^2} \qquad S_y = \sqrt{\frac{\Sigma Y^2}{N} - \overline{Y}^2}$$

TABLE 2

CALCULATING THE PEARSON PRODUCT-MOMENT CORRELATION COEFFICIENT: A CORRELATION OF READINESS AND READING ACHIEVEMENT TEST SCORES

X	X^2	Y	Y^2	XY
1.8	3.24	5.1	26.01	9.18
1.8	3.24	5.3	28.09	9.54
1.5	2.25	3.9	15.21	5.85
1.9	3.61	5.4	29.16	10.26
1.9	3.61	6.0	36.00	11.40
1.8	3.24	6.3	39.69	11.34
1.5	2.25	4.0	16.00	6.00
1.9	3.61	7.1	50.41	13.49
1.0	1.00	3.7	13.69	3.70
1.5	2.25	2.7	7.29	4.05
1.7	2.89	4.6	21.16	7.82
1.9	3.61	4.9	24.01	9.31
1.9	3.61	8.0	64.00	15.20
1.9	3.61	5.0	25.00	9.50
1.8	3.24	4.5	20.25	8.10
1.5	2.25	2.6	6.76	3.90
1.7	2.89	2.0	4.00	3.40
1.7	2.89	5.6	31.36	9.52
1.5	2.25	4.3	18.49	6.45
1.7	2.89	5.2	27.04	8.84
Σ = 33.9	Σ = 58.43	Σ = 96.2	Σ = 503.62	Σ = 166.85

The number of students involved in the study (20) is represented by the symbol N; the symbols $\bar{X}$ and $\bar{Y}$ represent the averages calculated from totals of columns X and Y. The above deviations resulted in a product of .240.

The calculated results were:

$$r = \frac{8.34 - 8.18}{(.17)(1.43)} = \frac{.16}{.24} = .666$$

The results of this data indicate a high correlation between the Lee-Clark Readiness Test scores and the scores obtained from the Iowa Basic Skills Test.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the validity of the Lee-Clark Readiness Test results in predicting achievement in the third grade. The hypothesis theorized that there is no significant correlation between an individual's readiness test score and his reading achievement scores in the third grade.

Several research studies have been conducted concerning the same problem. Separate studies conducted by Powell and Parsley ($r = .820$); Dean ($r = .590$); Robinson and Hall ($r = .580$); and Mitchell ($r = .578$) resulted in a high positive correlation of readiness and reading achievement test scores. Although the remainder of the research studies --including studies by Lee-Clark ($r = .490$); Roslow ($r = .520$); Moreau ($r = .46$); Bremer ($r = .400$); Ames and Walker ($r = .530$); and Kingston ($r = .262$)--ranged from low to low average correlations, their total average correlation was .497.

The importance of mental age in determining readiness and achievement was investigated in studies by Morphett and

Washburn, Gates, and Wilson, et al. In comparing variations in the predictive quality of mental and readiness test results to achievement, Fendrick and McGlade found little difference in the individual correlations of each, but a significant correlation when both sets of test results were correlated with reading achievement.

This study involved test data from a group of 20 beginning fourth grade youngsters from Buzzard Laboratory School. Data was obtained from the individual cumulative files on each child. The scores resulting from the Lee-Clark Readiness Test and the Iowa Test of Basic Skills were correlated by the Pearson product-moment correlation coefficient technique. The results indicated a high positive correlation of .666. It was concluded, therefore, that the Lee-Clark Readiness Test results accurately predicted the reading success a group of 20 youngsters would achieve in the third grade.

Analyzing research studies and computing statistical data pertaining to this study have been valuable in gaining an insight and a possible solution to a present-day educational problem.

Conclusions

Research relating to studies investigating the predictive value of reading readiness test scores in correlation with reading success resulted in a correlative

range of .262 to .820, averaging .504. In view of these studies, it may be concluded that reading readiness test results tend to predict reading achievement.

The purpose of this study was to determine the extent of correlation between the Lee-Clark Reading Readiness Test scores and the Iowa Basic Skills Test results. The relationship between the two sets of test scores was determined through the use of the Pearson product-moment correlation coefficient which resulted in a correlation of .666. Therefore, it may be concluded that the results of this study indicate that the Lee-Clark Reading Readiness Test scores were valid in predicting the future reading success of 20 children.

Recommendations

This study resulted in a high correlation between readiness and reading achievement scores which indicates the use of readiness tests as valid predictive instruments for future use in reading. However, "research shows that many slow-developing children catch up during their elementary school years."[1] It is recommended, therefore, that the use of readiness test scores not be limited to predicting reading achievement alone. The test data should be evaluated to determine areas of individual deficiencies

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[1]Albert J. Kingston, "Relationship of First Grade Readiness to Third-and-Fourth Grade Achievement," Journal of Educational Research, LVI (October, 1962), p. 61.

which will assist the teacher in planning instruction that will develop each child to his fullest potential.

To meet the individual needs of each child, the developmental scope and sequence of the reading program should lend itself toward meeting the needs of its student population; gifted and remedial reading programs should be established; and in-service training programs, introducing new methods and materials, should be made available to teachers.

In so providing for the individual differences of all our nation's children, the quality of American education will improve, thus enhancing the future of our country.

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