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AN INVESTIGATION OF READINESS TEST RESULTS
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THE UNIVERSITY OF OKLAHOMA
GRADUATE COLLEGE

AN INVESTIGATION OF READINESS TEST RESULTS WITH
KINDERGARTEN CHILDREN USING OBJECT-FORM
AND PAPER-PENCIL METHODS

A DISSERTATION
SUBMITTED TO THE GRADUATE FACULTY
in partial fulfillment of the requirements for the
degree of
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BY
LOIS ARMSTEAD EXENDINE

Norman, Oklahoma

1975

AN INVESTIGATION OF READINESS TEST RESULTS WITH
KINDERGARTEN CHILDREN USING OBJECT-FORM
AND PAPER-PENCIL METHODS

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AN INVESTIGATION OF READINESS TEST RESULTS WITH
KINDERGARTEN CHILDREN USING OBJECT-FORM
AND PAPER-PENCIL METHODS

CHAPTER I

INTRODUCTION

Since kindergarten children in our elementary schools devote a substantial portion of the school day to reading readiness activities, an important function of the curriculum is the provision of effective readiness experiences enabling the students to benefit maximally from future instruction in reading. The lack of particular prereading skills, in addition to lack of desire and lack of persistence at a task, often handicap children. Thorndike's Law of Readiness¹ stresses that frustration or satisfaction of the person depends to a great extent upon what he is prepared to do. The individual must have an appropriate mental set for a particular education experience. For the child whose motivation is doubtful, it is extremely important that readiness be developed prior to formal reading instruction. Therefore, teachers are faced with the problem of defining the starting point for initial reading instruction.

¹Edward L. Thorndike, Theories of Learning, Ernest R. Hilgard and Gordon H. Bower, "Thorndike's Connectionism," (New York: Appleton-Century Crofts, Education Division, Meredith Corporation, 1966), Chapter 2.

Harris and Serwer² stated that several prerequisite skills are recognized as necessary for the reading process and are measurable in tests of reading readiness. Linguistic maturity deals with conceptualization of common uses of words, phrases, and constructions as they make up sentence communication. Auditory discrimination with the essential phoneme-grapheme associations cannot be learned until they are perceived. Visual perception of letter forms must be present. Sensorimotor integration, habit of left-to-right sequencing, is basic to all reading. Another critical factor of readiness and important determiner of the timing and method of instruction is the learning ability of the child.

In a study to explore the possible relationships between success in beginning reading and reading experiences before the first grade, Almy³ found a significant, positive relationship existed between success in beginning reading and the child's responses to opportunities for reading prior to the first grade. These opportunities have been extremely limited for the child in the low socioeconomic level. Sheldon and Carrillo⁴ indicated the low social level and the educational and

²Albert J. Harris (Director), and Blanche L. Serwer, Comparison of Reading Approaches in First-Grade Teaching With Disadvantaged Children, the CRAFT Project, Cooperative Research Project No. 2677, The Research Foundation of the City University of New York for the Division of Teacher Education, The City University of New York, 1966.

³Millie Corinne Almy, "The Importance of Children's Experiences to Success in Beginning Reading," Research in the Three R's (New York: Harper and Brothers, 1958), pp. 48-52.

⁴William D. Sheldon and Lawrence Carrillo, "Relation of Parent's Home and Certain Developmental Characteristics to Children's Reading Ability," Elementary School Journal, LII, No. 1 (1952), pp. 262-70.

occupational level of the parents are negative factors in the achievement in reading of the child. Bond and Wagner⁵ found the disadvantaged child is often hungry, frightened, tired, sleepy, and in need of medical attention. His life is often filled with frustration, failure, uncertainties, and disappointments. He may change schools frequently and be very irregular in attendance in school.

McClellan⁶ was primarily interested in first grade children of the lower socioeconomic level. Her subjects were 230 children who had enrolled in the Compensatory Pre-Primary Education Program (COPE), a federally-funded research project, and 275 children who had not enrolled in the program. Using the Metropolitan Readiness Test, Form A and the Goodenough-Harris Draw-A-Man Test, Form R, administered at the beginning of first grade and the Metropolitan Achievement Test, Primary I Battery, Form A, she found that:

For prediction of success in reading of the first grade children from a low socioeconomic level, it is desirable to study the sexes separately. Predictions for girls can be made from scores obtained on readiness tests. Predictions for the boys can be made more accurately using the scores on the readiness tests in combination with an intelligence test score.

Research by Havighurst⁷ and McCarthy⁸ has shown that readiness to learn to read is influenced by the environment from which a child comes.

⁵Guy L. Bond and Eva Wagner, Child Growth in Reading (Chicago: Lyons and Carnahan, 1955), p. 78.

⁶Dorinda Ann McClellan, "Factors Which are Predictive of Reading Success of Low Socioeconomic Children in Selected First Grades" (unpublished dissertation, Oklahoma State University, 1968).

⁷Robert J. Havighurst, Human Development and Education (New York: Longmans, Green and Company, 1953), pp. 77-83.

⁸Dorothea McCarthy, "Factors That Influence Language Growth: Home Influences," Elementary English, XXIX (1952), pp. 421-28, 440.

Children who come from the low socioeconomic levels have been disadvantaged because of a lack of stimulation in their environment during their preschool experiences. This environment has molded the language development of the child which is inferior to that of a child coming from a more advantaged background. Research further indicates that there is a significant relationship between the oral language facility and success in beginning reading as studied by Williams,⁹ Hildreth,¹⁰ Robinson,¹¹ and Monroe.¹²

Havighurst¹³ stated that the incidence of children from the low socioeconomic level coming from broken homes is greater than that of children coming from higher socioeconomic level homes. This condition may adversely affect the success of children in their academic program.

Other researchers had previously stated a need existed for more adequate ways to determine readiness for beginning reading. Smith¹⁴ pointed out that if this be true for the general population, how much more true it is for the low socioeconomic level for which it is

⁹Gertrude H. Williams, "What Does Research Tell Us About Readiness for Beginning Reading?," The Reading Teacher, VI, No. 5 (1953), 34-40.

¹⁰Gertrude Hildreth, "Interrelationships Among the Language Arts," Elementary School Journal, XLVIII, No. 6 (1948), 538-49.

¹¹Helen M. Robinson, "Factors Which Affect Success in Reading," Elementary School Journal, LV, No. 1 (1955), 263-69.

¹²Marion Monroe, Children Who Cannot Read (Chicago: University Press, 1932), 92-93.

¹³Havighurst, Human Development and Education, p. 32.

¹⁴Nila B. Smith, "Matching Ability as a Factor in First Grade Reading," Journal of Educational Psychology, XIX, No. 11 (1928), 560-71.

expedient that every factor indicative of success be identified as early as possible in order to be utilized to the fullest extent.

Readiness tests will help to identify reading readiness and related capacities in kindergarten pupils and entering first-grade pupils. Providing the proper educational program for each pupil is a difficult but desirable goal, and as such becomes a major school responsibility. Scores from the test will provide several kinds of necessary data required for sound program planning. This study attempts to assess the level of individual pupil prereading ability using object-forms and paper-pencil tests to conclude whether some readers are limited in answering questions on tests when it is the state of presentation rather than the existing knowledge of the correct answer.

Statement of the Problem

The problem was to determine if there were significant mean differences and significant correlations among the raw scores of kindergarten students from different socioeconomic levels and sexes on the Lee-Clark Reading Readiness Test (1962 Revision) and an object-form of the identical test material items.

Purpose of the Study

The purpose of using the two methods was to determine if students perceived items better and received a higher score on tests when using object-forms rather than the usual paper-pencil technique of testing in classrooms. This study investigated an assumption that paper-pencil tests are adequate, an assumption that has rarely been challenged.

Hypotheses

In order to make definitive statements and arrive at defensible conclusions, it is necessary to state and statistically test the following null and subhypotheses:

- Ho₁ There are no statistically significant mean differences among the respective groups on each of the four subtests and total raw scores on the Lee-Clark Reading Readiness Test and an object-form of the same test among three socioeconomic status groups by sex.
- Ho_{1a} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1b} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1c} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1d} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1e} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1f} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

- Ho_{1g} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1h} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1i} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.
- Ho_{1j} There are no statistically significant mean differences between the raw gain scores of the upper and the middle socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{1k} There are no statistically significant mean differences between the raw gain scores of the upper and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{1l} There are no statistically significant mean differences between the raw gain scores of the middle and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{1m} There are no statistically significant mean differences between the raw scores of the total male population for each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{1n} There are no statistically significant mean differences between the raw scores of the total female population for each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{1o} There are no statistically significant mean differences between the raw scores of the total student population for each of the four subtests and the total scores on the object-form test and the Lee-Clark Reading Readiness Test.

The second general hypothesis and subhypotheses are stated as follows:

- Ho₂ There are no statistically significant correlations among the respective groups on each of the four subtests and total raw scores on the Lee-Clark Reading Readiness Test and an object-form of the test among three socioeconomic status groups by sex.
- Ho_{2a} There are no statistically significant correlations between the raw scores of the upper socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2b} There are no statistically significant correlations between the raw scores of the upper socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2c} There are no statistically significant correlations between the raw scores of the middle socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2d} There are no statistically significant correlations between the raw scores of the middle socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2e} There are no statistically significant correlations between the raw scores of the lower socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2f} There are no statistically significant correlations between the raw scores of the lower socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2g} There are no statistically significant correlations between the raw scores of the upper socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

- Ho_{2h} There are no statistically significant correlations between the raw scores of the middle socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2i} There are no statistically significant correlations between the raw scores of the lower socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.
- Ho_{2j} There are no statistically significant correlations between the gain scores of the upper and the middle socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{2k} There are no statistically significant correlations between the gain scores of the upper and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{2l} There are no statistically significant correlations between the gain scores of the middle and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{2m} There are no statistically significant correlations between the four subtests and the raw scores for the total male population on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{2n} There are no statistically significant correlations between the four subtests and the raw scores for the total female population on the object-form test and the Lee-Clark Reading Readiness Test.
- Ho_{2o} There are no statistically significant correlations between the four subtests and the raw scores for the total student population on the object-form test and the Lee-Clark Reading Readiness Test.

Limitations of the Study

1. This study is limited by the population of kindergarten students who were attending the Edmond Public Schools during the 1974-75 academic year.

2. Only students in the schools selected according to socioeconomic stratum established were included in the study.

3. The measuring instruments were limited to the Lee-Clark Reading Readiness Test, an object-form of each item of the testing instrument, and Hollingshead's Two Factor Index of Social Position for determining the participants' socioeconomic status.

4. The independent variables controlled in the study were limited to the students' sex, socioeconomic level, tests and grade level.

CHAPTER II

REVIEW OF THE LITERATURE

Beginning Reading Instruction

"During the past few years beginning reading instruction has received more attention than any other facet of the school curriculum," stated Heilman.¹ This is because beginning reading instruction is especially important. Teaching children to read is one of the most important functions of the elementary school. Improving the quality of reading instruction has long been one of the major concerns of educators in elementary schools. However, the concept of what constitutes satisfactory reading instruction is a changing concept. Tinker and McCullough² report that history of reading instruction reveals that concepts and methods of teaching reading have changed, along with the varying philosophies. Reading ability considered adequate a few years ago would be considered inadequate today. Stauffer³ stated,

The maturing citizen as well as the maturing reader is acquiring attitudes that encourage growth and responsibility rather than merely seeking a level. Learning to read is not only accomplished

¹Arthur W. Heilman, Principles and Practices of Teaching Reading (3rd ed.; Columbus: Charles E. Merrill Publishing Company, 1972), pp. 115-18.

²M. Tinker and C. M. McCullough, Teaching Elementary Reading (New York: Appleton-Century Crofts, 1962), p. 212.

³R. G. Stauffer, Teaching Reading as a Thinking Process (New York: Harper and Row, 1969), p. 130.

throughout school but also throughout life, and similarly learning to be a citizen is a matter of growth throughout life.

As the concept of the reading process has broadened and emphasis in instruction has changed during the last few years, teaching methods have been modified and changed also. These changed emphases in teaching methods are always areas of interest to those concerned with the teaching of reading.⁴

A major responsibility of every school is to educate, but in doing so it should not diminish or do injury to the child's personal view of himself as a learner. There is evidence, however, that this is what happens in many of our schools, perhaps as a result of rigid adherence to formal school curricula, standardized materials, and competitive grading practices. Educators communicate the child's inadequacies to him in subtle ways, creating destructive conditions.⁵ Since British informal schools have a number of safeguards against many of the fabrics which Americans have built into their system of formal education, "there is more potential for a positive image in the informal classroom. It can achieve the academic education of children and not destroy their confidence in the process," stated Manolakes.

Jacobs⁶ believed that the school needs to give deliberate attention to humanism. Every child knows that he is expected to learn

⁴Ibid.

⁵T. Manolakes, "Introduction: The Open Education Movement," The National Elementary School Principal, LII (November, 1972), pp. 11-15.

⁶L. B. Jacobs, "Humanism in Teaching Reading," Phi Delta Kappan, LII (April, 1972), pp. 464-65.

to read. He discovers that much of his success in school is dependent upon his ability to read. As soon as he begins to read, he begins learning something about himself and others. The methods used in teaching the child to read are an integral part of learning to read. The child will either learn to read by reading or he will learn to fail by failing. The ways in which he is taught to read are an important factor in his self-concept as a reader and in his perception of others as learners. The child surely has the right to read if the school is doing its job. "The right to read implies . . . the rightness of the reading environment, the rightness of the teaching, the rightness of the evaluations made of his progress" for keeping the child feeling that he can learn to read and that he would like to read better.

Rogers⁷ felt that since American teachers of reading are primarily concerned with the child's right to read, they are searching for more answers to questions about good beginning reading instruction. They believe there is much to be learned from the British who are trying to achieve a reconciliation between the curriculum and the human being. That is, the British are allowing the areas of curriculum to arise very much more from the children's interests. English primary education is trying to allow and encourage each child "to develop his full powers of body and mind (understanding, discrimination, imagination, creation) and to grow up as a balanced individual, able to take

⁷V. R. Rogers, "Primary Education in England: An Interview with John Coe," Phi Delta Kappan, LII (May, 1971), pp. 535-38.

his place in society and to live in 'love and charity with all men,'" stated Howson.⁸

Research on beginning reading has not been conclusive; much of it has been too fragmented to be of any significance. There has been much interest in the area of beginning reading, as noted by Weintraub.⁹

How children learn to read has been a topic of high interest to reading researchers since the very beginnings of published research. The intense research focus on this aspect of reading may be due in part to the importance and drama attached to learning to read.

Although educators do not know exactly how a child learns to read, they do know that "when teachers understand the psychological and environment factors involved, practice improves in the classroom," stated Johnson and Tamburrini.¹⁰

Readiness and Initial Reading Instruction

Teachers often recognize when a child shows interest in learning to read. Teachers become expert in recognizing signs of reading readiness in order to provide the great opportunities for success, reported Brown and Precious,¹¹ Fryer,¹² Johnson and Tamburrini.¹³

⁸G. Howson, ed., Children at School: Primary Education in Britain Today (New York: Teachers College Press, 1969), p. 263.

⁹Samuel Weintraub, "Reading Research for the Schoolman: A Look at Some Aspects of Learning to Read," Phi Delta Kappan, (April, 1971), pp. 490-93.

¹⁰J. Johnson and J. Tamburrini, Informal Reading and Writing (New York: Citation Press, 1972), p. 130.

¹¹M. Brown and N. Precious, The Integrated Day in the Primary School (New York: Agathon Press, 1969), p. 76.

¹²A. Fryer, "Teaching Reading in the Infant School," in V. R. Rogers, Teaching in the British Primary School (London: Collier-Macmillan, 1971), p. 105.

¹³Johnson and Tamburrini, Informal Reading and Writing.

Weber¹⁴ felt that initial reading readiness experiences included much discussion with the child of his paintings or his drawings. Under the child's picture, the teacher wrote what the child told her about it and his name. The child might trace or copy it. After many reading readiness experiences, the teacher wrote what the child said on a separate paper or on separate cards. Soon the child was given a word and told to find the rest of the words on his sheet from written signs around the room. Children asked other children for separate words. Word lists were common to all the children after the initial reading period.

Weintraub¹⁵ stated:

In the past three years alone, well over 1,100 published reports and summaries of research have been identified and abstracted in the annual summary of reading research. Of the topics covered by these reports, more research was reported on beginning reading than any other area.

However, this intense interest in beginning reading is not something that is new. Early schools in the United States have been concerned with the teaching of reading from the time of their earliest establishment, recorded Smith.¹⁶ Conway¹⁷ said the teaching of reading is one of the most crucial responsibilities of the elementary school.

¹⁴L. Weber, The English Infant School and Informal Education (Englewood Cliffs: Prentice-Hall, 1971), p. 220.

¹⁵Weintraub, "Reading Research for the Schoolman."

¹⁶Nila Banton Smith, American Reading Instruction (New York: Silver Burdett Company, 1934), p. 23.

¹⁷D. Conway, "Attitudes of Teachers of Grades One, Two and Three, in Louisiana, Toward the Teaching of Reading" (unpublished dissertation, Oklahoma State University, 1964).

The child must be taught to read in order to live intelligently and with pleasure in today's complex civilization, and so that he can learn whatever the school tries to teach through the medium of reading.

The factors which greatly influence reading readiness are many and of a complex nature, and are often so involved and interwoven that it is difficult to determine what single factor or group of factors bears most significance to the condition known as readiness for reading.

In the Report of the National Committee on Reading in 1925, the term of reading readiness seems first to have been used and quickly added to the educator's vocabulary. Sanderson¹⁸ reported that the factors considered regarding reading readiness were physical, intellectual development, development of powers of visual and auditory discrimination, facility in the association of ideas and in problem-solving, social and emotional maturity, linguistic background of the home, and the child's desire to learn to read. Mastery of the skills of reading to the maximum of an individual's capacity is crucial for successful achievement at every grade level and in every area of the curriculum.

The early investigators were concerned with identifying factors that influenced or were involved in readiness for reading. Researchers also attempted to identify those variables or factors which were indicative of reading failure or success.

¹⁸A. E. Sanderson, "The Idea of Reading Readiness--
A Re-examination," Educational Research, VI (November, 1963), pp. 3-9.

In the early studies attempts to determine the factors which were operational for success in reading were obscured by the efforts to determine what constitutes reading readiness. Hildreth¹⁹ and Spache²⁰ claimed that reading readiness consists of a number of closely related skills that must be developed prior to the child's learning to read. The development of these skills is based upon successful experiences within the child's environment. When the environment does not provide these experiences, special instruction in the form of training is necessary to provide those experiences.

Theodore Harris²¹ stated, "We need to understand more clearly the genesis and possible prevention of reading disability." Eve Malmquist²² suggested, "The ideal conditions would naturally be, however, to forestall and prevent the occurrence of special reading disabilities." Malmquist went on to suggest that if we are to do this we must "diagnose the child's qualifications for learning the

¹⁹Gertrude H. Hildreth, Nellie L. Griffiths, and Mary E. McGauvran, Manual for the Metropolitan Readiness Test (New York: Harcourt, Brace and World, Inc., 1965).

²⁰George Spache and Evelyn Spache, Reading in the Elementary School (Boston: Allyn and Bacon, Inc., 1969), pp. 44-45.

²¹Theodore L. Harris, "What Questions Does Reading Research Ask?" in J. Allen Figurel, ed., Reading as an Intellectual Activity, International Conference Proceedings, International Reading Association, Newark, Delaware, 1963.

²²Eve Malmquist, "Organizing Instruction to Prevent Reading Disabilities," in Reading as an Intellectual Activity, International Conference Proceedings, International Reading Association, Newark, Delaware, 1963.

elementary reading functions before he starts to school." Lampard²³ said: "Accumulatory evidence suggests that the syndrome of reading disability is observable in the early school years."

Reading readiness tests administered to groups of children are useful tools for the teacher; however, some do present a global picture and many are only used for placement in groups. Barrett²⁴ suggested caution in the use of readiness tests as the only means of evaluating the pre-reader. Binkley²⁵ and Akers²⁶ called for more study of readiness tests results when working with children from different socioeconomic levels.

Bond and Tinker²⁷ supported the thesis that reading is generally recognized to be the most important subject taught in the

²³Dorothy M. Lampard, "Early Diagnosis of Reading Disability," in Reading and Inquiry, J. Allen Figurel, ed., International Conference Proceedings, International Reading Association, Newark, Delaware, 1965.

²⁴Thomas C. Barrett, "Predicting Reading Achievement Through Readiness Tests," Reading and Inquiry, J. Allen Figurel, ed., Proceedings of the Annual Convention, International Reading Association, Newark, Delaware, 1965.

²⁵M. Edward Binkley, "School Entrance Variables and Later Achievement and Personality," Reading and Realism, J. Allen Figurel, ed., Proceedings of the Thirteenth Annual Convention, International Reading Association, Newark, Delaware, 1971.

²⁶James C. Akers, "A Predictive Validity Study of the Metropolitan Readiness Tests" (unpublished dissertation, Oklahoma State University, 1969).

²⁷Guy L. Bond and Miles A. Tinker, Reading Difficulties: Their Diagnosis and Correction (New York: Appleton-Century Crofts, 1973), p. 8.

elementary school. The importance of proficient reading becomes clearer when its role in various aspects of a person's life is considered. Among many others the following are well worth special notice: (a) daily life activities, (b) progress in school, (c) recreation, (d) personal and social adjustment, and (e) citizenship.

Effectiveness of Tests Predicting Reading Success
or Reading Failure

In a study in which the mean scores of intelligence of 151 girls and 151 boys in the first grade were equivalent at midyear, Balow²⁸ found that the girls were superior to the boys on reading readiness test scores. When reading readiness was held constant by an analysis of covariance, there was no significant difference between the gender on a reading achievement test administered at the end of the first year. Balow inferred that because word perception and readiness is amenable to training, his data supported a cultural, nonmaturational theory of sex differences in reading achievement.

From one of the First Grade Studies sponsored by the United States Office of Education, Fry²⁹ reported the best predictor for

²⁸Irving H. Balow, "Sex Differences in First Grade Reading," Elementary English, XL (March, 1963), pp. 303-06, 320.

²⁹Edward Bernard Fry, "First Grade Reading Instruction Using a Diacritical Marking System, the Initial Teaching Alphabet and a Basal Reading System," Cooperative Research Project 2745, Office of Education, United States Department of Health, Education and Welfare, 1965, p. 89.

reading achievement was the intelligence quotient raw score (mental age). The mental age had a higher correlation with Stanford Paragraph Meaning Scores than the intelligence quotient, or the total, or the subtest scores of either of the reading readiness tests. Stauffer³⁰ recorded the results of another First Grade Study showed that of the pretest measures reported, the test of intelligence provided the best prediction of success in reading, spelling, vocabulary, and arithmetic. Durkin³¹ reported a correlation of .40 between intelligence as measured by the Revised Stanford-Binet Scale and achievement in reading of early readers. Although Steinback³² found a high relationship between mental age and reading achievement, the relationship was lower than that found for auditory discrimination ability, and range of information.

Aker's³³ sample consisted of 630 randomly selected students from a large metropolitan school system. The Metropolitan Readiness Test, Form A, the predictor variable, was administered during the spring of the kindergarten year. The criterion variable, the Gates-McGinitie Reading Test, Primary A, Form 1, was administered in the first grade. Using a multiple linear technique, he found significant t values for

³⁰Russell G. Stauffer and W. Dorsey Hammond, "Effectiveness of a Language Arts and Basic Reader Approach to First Grade Reading Instruction," Cooperative Research Project 2679, Office of Education, United States Department of Health, Education, and Welfare, 1965, p. 140.

³¹Dolores Durkin, "Children Who Learned to Read at Home," Elementary School Journal, LXII (October, 1961), 15-18.

³²Mary Nila Steinback, "Foundations of a Successful Program," Education, LXXIII (May, 1953), 543, 555.

³³J. C. Akers, "A Predictive Validity Study of the Metropolitan Readiness Tests."

the total sample on all subtests of the Metropolitan Readiness Test except Word Meaning. Copying was significant at the 0.05 level, Listening was significant at the 0.01 level, while the significant levels of the Matching, Alphabet and Numbers were 0.001. In discussing the results, the author felt that the total test was the most consistent and efficient predictor of reading achievement in grade one.

Clutts³⁴ compared two measures of reading readiness to determine their relative effectiveness as predictors of reading achievement at the end of first grade. Her 235 subjects were in twelve first grade classrooms in Fairbanks, Alaska, which were taught by teachers with a minimum of three years of primary teaching experience. The predictor variables in this study were the Metropolitan Readiness Test, Form A and a teacher rating scale of reading readiness designed for the study. The teacher rating scale was completed before the Metropolitan Readiness Test was administered three weeks after school began. The criterion measure, the Stanford Reading Achievement Test, Primary I, Form W, was administered at the end of the eighth month of school.

Product moment coefficients of correlations were computed between the predictor variables and the criterion variables to determine the predictive validity of the readiness test and scale. Multiple regression analysis was used to determine the relative predictive value of each of the readiness tests and scales. The Metropolitan had a correlation of .74 with reading achievement, while the Reading Readiness

³⁴J. B. R. Clutts, "Predicting Reading Success for the First Grade Child" (unpublished doctoral dissertation, University of Missouri, Columbia, 1969).

Rating Scale had a correlation of .67. Both correlations were significant, yet they were not significantly different from each other. She concluded that the combination of (1) visual discrimination, (2) desire to read, (3) ability to attend, and (4) auditory discrimination, when appraised subjectively on the teacher rating scale constructed by the researcher plus a standardized readiness measure was a better predictor of reading achievement than either measure used alone.

The predictive validities of the Lee-Clark Reading Readiness Test (1962 Revision) and the California Test of Mental Maturity (1957 S-form) were compared by Hopkins and Sitkei.³⁵ Their subjects were all entering first grade pupils from two elementary schools in a lower-middle class community. The readiness and intelligence tests were administered during the first three weeks of school, while the criterion test, the Lee-Clark Reading Test, Primer (Form A) was administered near the end of school. The correlation coefficients computed between the predictor variables and the reading test were reported as .612 for the readiness test and .541 for the intelligence test, both of which were significant at the 0.05 level of confidence. When the predictive validity of the two tests were compared there was no significant difference in the two correlations.

The correlation coefficients between the two predictor variables and end of the year teacher marks were also significant at the 0.05 level, yet again not significantly different from each other.

³⁵K. D. Hopkins and E. G. Sitkei, "Predicting Grade One Reading Performance: Intelligence Tests vs. Reading Readiness Tests," The Journal of Experimental Education, XXXVII (1969), 31-33.

These coefficients were .571 for the readiness test and .513 for the intelligence test.

A multiple regression equation using both predictor variables did not significantly increase the predictive power of the readiness test when used alone. Considering this fact plus the factors of time, expense, and the ability to make accurate interpretations from I.Q. tests, the authors felt that the use of readiness tests for prediction purposes was preferable to that of intelligence tests.

In attempting to determine the predictive validity of (1) the Olson Reading Readiness Test, (2) the Gates Reading Readiness Test, (3) the Metropolitan Readiness Test, and the Wechsler Intelligence Scale for Children combined, when compared with the criterion variables of Stanford Achievement Test subtests Word Reading and Paragraph Meaning, Johnson³⁶ found different predictors for first and third grade. Due to attrition there were only 148 who completed the study.

The best predictor for Word Reading at the first grade level was the Olson Reading Readiness Test, while the best predictor for this subtest at the third grade level was the combined variable of the Metropolitan Readiness Test and the Wechsler Intelligence Scale for Children. The Olson Reading Readiness Test was also the best predictor for Paragraph Meaning at first grade, while the combined Metropolitan Readiness Test

³⁶C. I. Johnson, "Predictive Validity of Selective Reading Readiness Factors" (paper presented at the International Reading Association Conference, Kansas City, Missouri, April 30-May 3, 1969).

and the Wechsler Intelligence Scale for Children was the best predictor of Paragraph Meaning at the third grade level. The author felt that

The classroom teacher could get valuable information about the degree of success to be expected from a test comparable to the Olson Reading Readiness Test or a general reading readiness test in combination with an intelligence test. The administration of more than one type of readiness test would not appear to yield very much additional information helpful in determining a child's reading potential.

The Wechsler Preschool and Primary Scale of Intelligence, the Sartain Reading Readiness Test, and an Oral Language Sample were the predictor variables that Live³⁷ studied. The criterion variables were the Metropolitan Achievement Test, Primary Battery and its subtests Word Knowledge, Word Discrimination, and Reading (Comprehension). Her subjects were sixty-three boys and ninety-three girls who were randomly selected from thirteen classrooms in six schools.

The statistical techniques employed were the Pearson product-moment coefficients of correlation, multiple correlation, multiple regression, and regression equations. Results indicated that at the .01 level of confidence all tests and their subtests were significantly related to Word Knowledge and Word Discrimination. The Wechsler-Vocabulary was the only predictor variable not significantly related to the Total Reading Test score, while the Wechsler-Sentences and Sartain-Rhyming were the only predictors not significantly correlated with Reading (Comprehension).

The highest correlations ($r=.70$) were reported between the Wechsler-Full Scale I.Q. and both Word Knowledge and Word Discrimination.

³⁷N. J. Live, "Degree of Relationship Among a Number of Readiness Factors and Success in Beginning Reading" (unpublished doctoral dissertation, The University of Pittsburg, 1969).

The highest correlation for the Reading subtest was .45 for both the Wechsler-Block Designs and Full Scale I.Q. In considering the Total Reading Test, the highest correlation was with the Sartain Total, $r=.60$. This led Live³⁸ to the conclusion:

The WPPSI [Wechsler], although somewhat helpful, does not appear to be the most effective and efficient test to use for predicting success in beginning reading.

The SRRT [Sartain] appears to be quite effective in predicting success in beginning reading. The unique subtest, Word Memory, did an excellent job of discriminating and predicting.

She concluded that reading achievement was better predicted by combinations of the tests rather than by a single test score. She further suggested the use of subtests as a diagnostic tool in identifying individual strengths and weaknesses.

Although Lowell³⁹ approached the prediction of reading achievement through the use of readiness factors, he employed standardized tests for his predictor variables. The criterion variable was an average grade equivalent score for the Word Recognition, Oral Reading and Silent Reading subtest of the Diagnostic Reading Scales.

His subjects were 209 first grade students who were tested at the beginning and end of school. Correlations of .50 were accepted as significant because that indicates a 13 percent better than chance estimate of prediction. Using this criterion, Lowell⁴⁰ concluded that

³⁸N. J. Live, "Reading Readiness Factors and Beginning Reading Success," The Reading Teacher, XXIV (1970), 124-29, 163.

³⁹Robert Edward Lowell, "An Evaluation of Selected Reading Readiness Factors and Predictors of Success in First Grade Reading" (unpublished doctoral dissertation, The University of Connecticut, 1969).

⁴⁰Ibid.

of the readiness factors studied only Knowledge of Alphabet Letter Names ($r=.63$) was an important predictor of success in reading. Word Learning Rate (.53) and Auditory Discrimination (.51) were of "borderline" value as predictors of reading achievement.

The subjects in Bilka's⁴¹ study were 353 remaining students who had participated in the Office of Education, U. S. Department of Health, Education and Welfare Project #2729 from 1964 to 1967. The predictor variables in her study were (1) Pintner Cunningham Primary Test, Pintner General Abilities Test, Form A for Grade One, 1964; (2) Individual Record Checklist-Maturity Level for School Entrance and Reading Readiness for Kindergarten and First Grade by Katherine Banham; (3) Murphy-Durrell Diagnostic Reading Readiness Test, Revised Edition, 1964; (4) Metropolitan Readiness Test, Form A, Standardized Edition, and (5) Thurstone-Jeffery Primary Perception Tests, 1956.

The criterion variables were measured by the (1) Word Reading, (2) Paragraph Meaning, (3) Vocabulary, and (4) Word Study Skill subtest of the Stanford Achievement Test, Primary I, Form X, 1964, administered in May, 1965. The appropriate forms of the Stanford Achievement Test were given in 1966 and 1967.

Statistical analysis using the techniques of canonical correlations, analysis of variance, and tests of significance for the correlations yielded the following results:

⁴¹L. P. Bilka, "An Evaluation of the Predictive Value of Certain Reading Readiness Measures as Related to Method of Instruction, Sex and Mental Age" (unpublished doctoral dissertation, University of Pittsburgh, 1970).

1. The Murphy-Durrell and Metropolitan tests were the strongest and best predictors of reading achievement as measured by the Stanford Achievement Test.
2. There was a significant contribution of all subtests of the Murphy-Durrell to reading prediction.
3. The subtests of Word Meaning, Numbers, and Alphabet were strong contributors to prediction of reading achievement.
4. The combination of the Word Meaning subtest from the Metropolitan plus Phonemes, Letter Names, and Learning Rate subtests from the Murphy-Durrell provide the strongest and most stable correlation with reading achievement over a three year period.

One hundred eight children were measured for reading achievement using the total score of the Word Recognition and Language Perception subtest of the SRA Achievement Test for Reading (Level 1-2) as the criterion variable. The group had originally been administered the predictor tests as an evaluation of a headstart program. The predictor variable that was most significant in predicting reading achievement at the beginning of second grade was the total score for the Metropolitan Readiness Test. The following subtests are also significantly related to reading achievement at the 0.01 level: (1)Alphabet, (2) Numbers, (3) Matching, (4) Copying, and (5) Listening. Goodstein, Whitney, and Cawley⁴² conclude that "The Metropolitan Readiness Test total score appears to offer the most potential for adequate discrimination among failing and adequate readers."

In a study reported by Carter⁴³ to determine if empirical evidence (examples of children's language) can be identified that supports

⁴²H. A. Goodstein, G. Whitney, and J. F. Cawley, "Prediction of Perceptual Reading Disabilities Among Disadvantaged Children in the Second Grade," The Reading Teacher, XXIV (1970), 23-28.

⁴³Helen R. Carter, "How Mental Operations Are Reflected in Children's Language Through Use of the Lavatelli Early Childhood Curriculum" (unpublished dissertation, University of Oklahoma, Norman, 1972).

or contradicts the theoretical assumptions of the Lavatelli Early Childhood Curriculum, seven kindergarten students were taught a series of structured or unstructured omission lessons five days a week for a period of seven weeks with the series of lessons approximately ten to twenty minutes in length. The series of lessons involved activities related to classification, number, measurement, space, seriation and Piagetian Tasks.

The activities and objects of the Lavatelli Early Childhood Curriculum generated many examples of children's syntactical structuring of language. During the structured lessons with the teacher modeling and eliciting responses, all children produced more language units in the sentential mode containing two or more properties, actions, complementary classes and abstractions. During the unstructured lessons, without the teacher modeling and eliciting responses, all of the children's language units began to include a greater proportion of language units in the labeling mode rather than the sentential mode. So it was apparent that the structuring of language in the Lavatelli Early Childhood Curriculum increased the use of the sentential mode and the frequency of the language elements of property, action, complementary classes and abstractions utilized by children to conduct their mental operations.

Harckham⁴⁴ used 553 subjects in the study of prediction from kindergarten measures to reading achievement in grades one, two, three,

⁴⁴L. D. Harckham, "Prediction of Reading Achievement in Grades One, Two, Three and Four Using Kindergarten Measures" (unpublished doctoral dissertation, Fordham University, 1970).

and four. The predictor variables were measured by scores on the following tests: (1) Metropolitan Readiness Test, (2) Goodenough Draw-a-Man Test, (3) Teacher Ranking, and (4) Rating on a composite behavior rating scale. The criterion variables were measured by the Metropolitan Achievement Test in the first grade and thereafter by the appropriate form of the Stanford Achievement Test.

Using the statistical operation of multiple correlations, multiple regression, and intercorrelations, she found that the best predictor of reading achievement for all four years was the Metropolitan Readiness Test with coefficients from .63 for first grade to .74 for the third grade. When the Metropolitan subtests were analyzed instead of the total score, it was found that the Alphabet and Numbers subtests were the best predictors, while Word Meaning, Matching and Copying had correlations that ranged in the .40's and .50's. Listening was the poorest predictor of all.

Ward⁴⁵ used a sample of 278 students to compare the predictive validity of two measures of readiness for reading, the Murphy-Durrell Reading Readiness Test and the Coding subtest of the Wechsler Intelligence Scale for Children. The criterion variables studied were the subtests of the Stanford Achievement, Primary I Battery. All of the Pearson product-moment correlations were higher for the Murphy-Durrell Reading Readiness Test than for the Coding subtest. Furthermore, there was a significant difference at the .01 level in the correlations for the following subtests: Word Reading, Paragraph Meaning, Spelling, Word Study Skills, and Arithmetic.

⁴⁵B. J. Ward, "Two Measures of Reading Readiness and First Grade Reading Achievement," The Reading Teacher, XXIII (1970), 637-39.

Two of the purposes of the study by Wood⁴⁶ were to determine the relative effectiveness of several tests administered to kindergarten children in predicting reading achievement at the end of second and third grade, and to determine the optimum combination of variables in the prediction of reading achievement. Her subjects were 595 students from the Cedar Fall Public Schools who were enrolled in the school system from 1966 to 1970. The predictor variables in the study were: (1) Classroom teachers' ratings, (2) a Self-Portrait test, (3) the Metropolitan Readiness Test, (4) SRA Primary Mental Abilities Test, and (5) a Kindergarten Inventory developed by Wood. The criterion variable for the second grade was the Paragraph Meaning subtest of the Stanford Achievement Test. The criterion variable for the third grade was measured by the Reading Comprehension subtest of the Iowa Test of Basic Skills.

A step-wise multiple regression analysis revealed that all the predictor variables except the Kindergarten Inventory were significantly (0.01 level) correlated to reading achievement at the end of second and third grades. Analysis of the Metropolitan Readiness subtests showed that they were all correlated to reading achievement in both grades at the 0.01 level, except for Listening at the 0.05 level.

Haraughty⁴⁷ in attempting to identify factors significantly correlated to reading failure at the first grade level, used 100 students

⁴⁶M. H. Wood, "A Longitudinal Study of the Effectiveness of Certain Kindergarten Tests in Predicting Reading Achievement, School Failure, and the Need for Special Services" (unpublished doctoral dissertation, Indiana University, 1970).

⁴⁷E. T. Haraughty, "Use of a Pre-Reading Predictive Index to Determine Potential Failure in First Grade Reading" (unpublished doctoral dissertation, Oklahoma State University, 1971).

in her population. Of seven tests on her Pre-Reading Predictive Index, three subtests, Learning Rate, Peabody Picture Vocabulary Test, and Oral Language were significantly related to reading achievement as measured by the Vocabulary subtest of the Gates-MacGinitie Reading Test, Primary A, Form I. Learning rate, Peabody Picture Vocabulary Test, and the Sentences test all correlated significantly with reading achievement as measured by scores on the Comprehension subtest on the Gates-MacGinitie.

Binkley⁴⁸ conducted a study in Nashville, Tennessee, with 1,110 pupils from 39 schools in culturally deprived neighborhoods. He was attempting to assess the relative importance of the measured readiness level at first grade entrance upon fourth grade achievement and personality adjustments of the culturally deprived children. Variables at school entrance included chronological age, readiness level, sex, and race. Readiness was divided into three levels: below average, average, and above average. Factor analysis was used to test the effects of each variable upon achievement in the fourth grade. Significant findings showed in this study that below average children scored low on achievement and personality tests four years later. Binkley recommended preschool testing of culturally deprived children with more refined instruments to determine needs before the child enters formal school.

Rosenfield⁴⁹ studied 30 first grade children selected from two midwestern urban schools using the Illinois Test of Psycholinguistic

⁴⁸Binkley, "School Entrance Variables and Later Achievement and Personality."

⁴⁹Abby G. Rosenfield, "Psycholinguistic Abilities as Predictors of Reading Ability and Disability" (Chicago: Northeastern Illinois State College, February, 1971).

Abilities in an attempt to predict later reading ability and disability. The 30 subtests were considered to closely resemble the norming group of the Illinois Test of Psycholinguistic Abilities. The complete test was administered to the randomly selected children in November. Mental ability was determined through the use of the B scale of the Kent Series of Emergency Scales. Five months later the Diagnostic Reading Scales were administered. A checklist was developed to indicate teacher judgment of each subject's psycholinguistic, intellectual, scholastic, and behavioral characteristics. Data were analyzed using stepwise multiple correlation. These data indicated total score on the Illinois Test of Psycholinguistic Abilities was a very weak predictor of reading level. The best prediction came from the representational level of the Illinois Test of Psycholinguistic Abilities. A significant difference at the .05 level did occur in the number of strengths and weaknesses shown by the high and low groups. Teachers were better able to select the high and low groups than was the Illinois Test of Psycholinguistic Abilities. They were in relatively close agreement on strengths and weaknesses. In the discussion Rosenfield suggests caution in the use of Illinois Test of Psycholinguistic Abilities as a predictor of reading ability or disability.

Webb⁵⁰ compared the effects of two different methods of presenting testing materials on the Metropolitan Readiness Test scores of first-grade students from three socioeconomic status levels. Samples of

⁵⁰Sarah L. Webb, "A Comparison of Three-Dimensional Mock-Up and Paper-Pencil Presentations of Readiness Test Material to First-Grade Students from Different Socioeconomic Levels" (unpublished dissertation, University of Oklahoma, Norman, 1974).

ninety-four males and ninety-three females were tested on both the Form-A of the Metropolitan Readiness Test and the three-dimensional mock-up of that same test. Test materials were alternately presented to the various groups.

Primary comparisons were made by determining the differences and relationships among the six subtests and total scores from the Form-A presentation and the six subtests and total scores from the mock-up presentation. The results of testing indicated that in most instances both sex groups at each socioeconomic level performed better on the mock-up test version. Scores recorded for each group showed that the greatest improvement was experienced by the lower socioeconomic group (8.10 total points increase); the upper socioeconomic group experienced the second highest increase (6.67 total points); and the middle socioeconomic group experienced the least increase of all (5.77 total points).

As reported in the present study, the amount of increase experienced by all three socioeconomic groups was significant on the object-form in the study by Webb. The overall increase experienced by the male participants (8.01 total points) was higher than the increase experienced by the female participants (5.79 total points).

Muller⁵¹ stated that Melle Inhelder, who worked with Piaget for many years, defines Piaget's work thusly. According to Piaget, children develop in stages: Stage 1--sensorimotor operations (it facilitates

⁵¹Philippe Muller, The Tasks of Childhood, trans. by Anita Mason (New York: McGraw-Hill Book Company, 1969), pp. 54-64.

the progressive building-up of the world of objects of the immediate environment); Stage 2--concrete operations (two to seven years when mental operations become more elaborate), the time when the child completes structure and refinement; Stage 3--formal operations when the thought-processes of the child begin to resemble those of the adolescent and adult. The child can form hypotheses and reason in abstract form.

It is at the concrete stage of the child's mental functioning that the kindergarten child is functioning. At the beginning, concrete operations are irreversible for the child; that is shown by the fact that the child does not anticipate their result and is guided by perceptual evidence. Gradually the operations do become reversible, and thenceforth form a system of operation. Gradually the intellectual operations become progressively more elaborate, and finally form logical structures which, when internalized and freed from the concrete content, will constitute the formal operations of the next stage. The rationale of this study is that kindergarten children can perform better when presented with concrete materials in performing on a test.

Summary

The studies presented in the review of the literature point out that it is possible to identify in the prereading stage those children who will encounter difficulty when presented formal reading instruction. Implied in the research was the idea that to draw attention early to these high risk children will help prevent failure at a later time.

A review of the literature revealed numerous investigations undertaken to identify those factors which were significantly related to achievement of reading in the early grades. Many of these studies

have been involved with the readiness tests and with the factors which were involved in readiness. There seemed to be some agreement that there needs to be additional information to add to the readiness test instruments now available in order to increase their effectiveness as predictors of reading achievement.

Most of the investigations which have been concerned with the relationship between sex and achievement in reading have found significant difference in achievement in favor of the girls. When chronological age was considered as a variable, most investigators were in agreement that there is either a very low or a negative correlation between chronological age and success in reading.

Several writers agreed on the importance of emotional, social, and personal adjustments in a child as related to success in reading. Other physiological factors as well as the experiential background of a child have been reported to be associated with achievement in reading.

Investigations concerning intelligence and achievement in reading revealed conflicting evidence. It might be said that although there is a high relationship between the intelligence of a child and his success in reading, the achievement of an individual cannot be accurately predicted from a measure of his intelligence alone.

One common idea seems to run through all available literature in this area. This is a concern to identify potential reading failures early.

CHAPTER III

METHODOLOGY AND DESIGN

Design of the Study

The kindergarten students in Edmond Public Schools were classified into three socioeconomic strata groups by using Hollingshead's Two Factor Index of Social Position and randomly selected for participation in the study presented herein. Four hundred fifty-three parents responded to the questionnaires (Appendix A), a total of two hundred ten (N=210) students participated in the research study. Thirty-five boys (N=35) and thirty-five girls (N=35) were randomly selected in each of the lower, middle and upper socioeconomic strata groups (Table 2). The Lee-Clark Reading Readiness Test was presented in object-form and paper-pencil form alternately to the various groups by trained test administrators. Thirty hypotheses were tested using the data collected from the four subtests and total raw scores. Therefore, the intention of this study was to compare the differences in the Lee-Clark Reading Readiness Test (1962 Revision) raw scores of the kindergarten students from three socioeconomic levels when the test items were presented to the students in two different ways.

TABLE 1
DESIGN OF SAMPLING

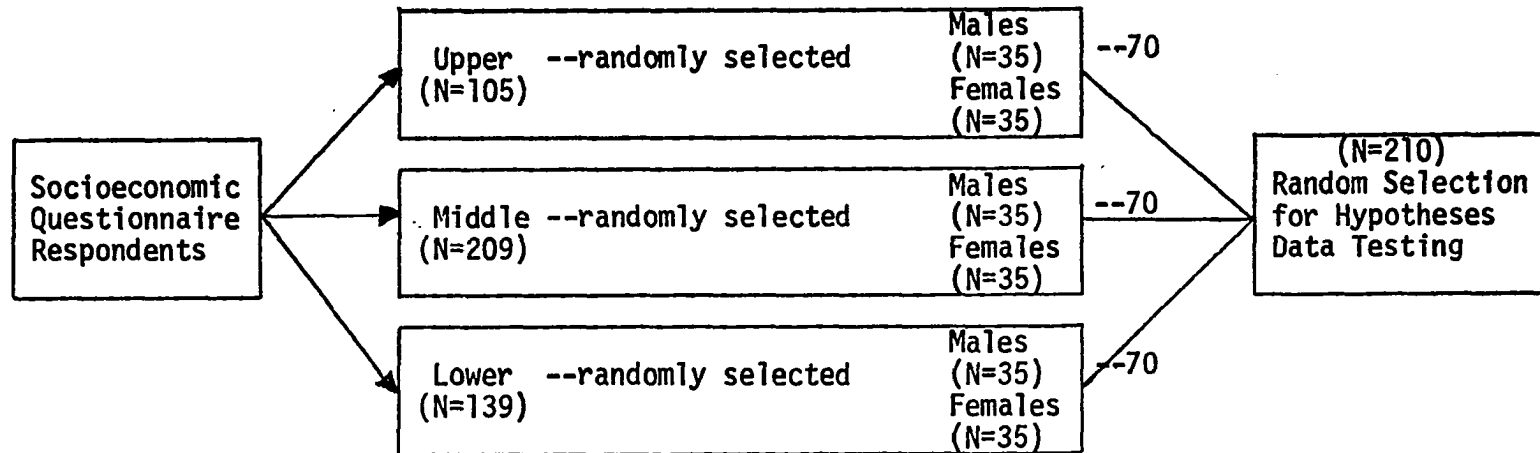


TABLE 2

TESTS PRESENTED ALTERNATELY TO NUMBER OF
STUDENTS STUDIED

Socioeconomic Stratum	Male	Female	Totals
Upper	Test 1--Paper-pencil Test 2--Object-form N=35	Test 1--Object-form Test 2--Paper-pencil N=35	N=70
Middle	Test 1--Object-form Test 2--Paper-pencil N=35	Test 1--Paper-pencil Test 2--Object-form N=35	N=70
Lower	Test 1--Paper-pencil Test 2--Object-form N=35	Test 1--Object-form Test 2--Paper-pencil N=35	N=70
Totals	N=105	N=105	N=210

Instruments Used and Their Application

The Two Factor Index of Social Position by August B. Hollingshead was premised upon three assumptions: (1) the existence of a status structure in the society; (2) positions in this structure are determined mainly by a few commonly accepted symbolic characteristics; and (3) the characteristics symbolic of status may be scaled and combined by the use of statistical procedures so that a researcher can quickly, reliably, and meaningfully stratify the population under study (Appendix A).

To determine the social position of an individual or of a household, two items are essential: (1) the precise occupational role the head of the household performs in the economy; and (2) the amount of formal schooling he/she has received. Each of these factors is then scaled according to a system of scores. The questionnaire in Appendix A was utilized in determining the population for the study.

Four hundred fifty-three (N=453) parents of kindergarten students completed the questionnaire shown in Appendix A. The Two Factor Index of Social Position scale is premised upon the assumption that occupations have different values attached to them by the members of our society.¹ The hierarchy ranges from low evaluation of unskilled physical labor toward the more prestigious use of skill, through the creative talents of ideas, and the manipulation of men.

The educational scale is premised upon the assumption that men and women who possess similar educations will tend to have similar

¹August B. Hollingshead, The Two Factor Index of Social Position (Copyrighted 1957), privately printed, 1965, Yale Station, New Haven, Connecticut.

tastes and similar attitudes, and they will also tend to exhibit similar behavior patterns. Both the occupational and the educational levels are divided into seven positions.

The factors of Occupation and Education are combined by weighting the individual scores obtained from the scale positions. The weights for each factor were determined by multiple correlation techniques.

The weight for each factor is:

<u>Factor</u>	<u>Factor Weight</u>
Occupation	7
Education	4

To calculate the Index of Social Position score for an individual, the scale value for Occupation is multiplied by the factor weight for Occupation, and the scale value for Education is multiplied by the factor weight for Education. The scores may be arranged on a continuum or divided into groups of scores to determine if the child is in the low, middle, or high social position.

The Lee-Clark Reading Readiness Test (1962 Revision) was chosen to determine the participants' readiness scores. The four subtests are (1) Matching Letter Symbols, (2) Crossing Out Letter Symbols, (3) Vocabulary and Following Instructions Concepts, and (4) Identification of Letters and Words Symbols. The test-retest reliability of the Lee-Clark Reading Readiness Test ranges from .83 to .94 on the subtests, with a correlation of .92 for the whole test. The validity of the test has been measured against a criterion of success at the end of the first year. On the 1943 edition a correlation of .67 was obtained with the test.²

²Oscar K. Buros, ed., Seventh Mental Measurements Yearbook (Highland Park, N.J.: Gryphon Press, 1972), pp. 752-53.

These validity and reliability indices are considered to be sufficient and the test is adaptable to being constructed in object-form.

Object forms of each test item were made to scale of the eight-page readiness test. The letters and figures were placed on sheets of masonite painted white. In order that the testing could be completed within ten days, five sets of the test materials were constructed.

Five testers were trained to administer and score the object-form and paper-pencil tests. The timing for administration of the test was closely adhered to during the period of administration.

Data Analysis

The statistical analysis was performed on the raw scores taken from the subtests and total scores on the paper-pencil and object-form of the Lee-Clark Reading Readiness Test (1962 Revision). The first step in the data analysis procedure was to compute the descriptive statistics for the male and female groups in their respective socioeconomic stratum.

The .05 level of significance was adopted for rejection of the null hypothesis. The students t test, a z test, and a Pearson's Product-Moment Correlation was used to test the thirty null hypotheses which were stated before collection of the data. The F value was calculated by using Fisher and Yates³ statistical tables for calculating formulas. Chapter IV contains results derived from these data analyses.

Data analysis began by grouping the students' scores on the two forms of the Lee-Clark Reading Readiness Test according to sex by

³Ronald A. Fisher and Frank Yates, Tables for Biological, Agricultural and Medical Research (6th ed.; New York: Hafner Press, 1963), p. 63.

socioeconomic level. A mean difference (gain or loss score) measure was computed for each student when the Lee-Clark Reading Readiness Test scores were subtracted from the object-form raw scores. The data analysis consisted of computing the descriptive statistics on each set of data such as the mean ($\bar{X}$), standard deviation (S) and variance (S^2).

Analysis of the data when testing the hypotheses required the use of the following statistical tests: (1) the student's t test both for correlated data and independent data, (2) the Pearson's Product-Moment Correlation Coefficient for determining the relationships among the Lee-Clark Reading Readiness Test and object-form raw scores of the various groups, and (3) the z test for comparing the Lee-Clark Reading Readiness Test object-form correlation coefficients of the various socioeconomic groups whenever inter-group comparisons were made. All subhypotheses of Hypothesis H_{01} were tested with a t test for correlated data except subhypotheses H_{01j} , H_{01k} , and H_{01l} . These three subhypotheses were tested by performing a student's t test for two independent samples between the Lee-Clark Reading Readiness Test object-form gain scores computed for each of the socioeconomic groups being compared.

All sub-hypotheses of Hypothesis H_{02} were tested with a Pearson's Product-Moment Correlation Coefficient (" r ") except subhypotheses H_{02j} , H_{02k} , and H_{02l} . These three subhypotheses were tested by performing a z test for two independent correlations between the Lee-Clark Reading Readiness Test object-form correlation coefficients computed for the two socioeconomic groups being compared when inter-group comparisons were being made.

CHAPTER IV

RESULTS OF DATA ANALYSIS

This chapter contains the results derived from the statistical calculations made in testing the hypotheses. A student's t test, a Z test, and a Pearson's product-moment correlation were used to test thirty null hypotheses which had been stated before the data were collected.

Hypothesis Ho₁

Hypothesis Ho₁ was concerned with the differences between scores from the Lee-Clark Reading Readiness Test (1962 Revision) and object-form scores from the same test. There was an exception to these comparisons. This exception occurred when comparisons were being made among the three socioeconomic status groups. For these treatments the gain scores (difference between the Lee-Clark Reading Readiness Test and object-form scores of the same test) were computed for each group and used as raw scores for making the desired comparisons.

The first general hypothesis tested in the study was stated in the null form as follows:

Ho₁ There are no statistically significant mean differences among the respective groups on each of the four subtests and total raw scores on the Lee-Clark Reading Readiness Test and an object-form of the same test among three socioeconomic status groups by sex.

The first general hypothesis was reduced to fifteen specific subhypotheses to facilitate its testing. The specific null hypothesis tested in each case is stated, and the statistical results are presented in an accompanying table.

- Ho_{1a} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 3) indicated that significant mean differences existed between the Lee-Clark Reading Readiness Test (paper-pencil) and the object-form raw scores of the upper socioeconomic status males. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant mean difference between paper-pencil and object-form scores on Subtest II (crossing-out letter symbols); therefore, the hypothesis related to this subtest was accepted.

- Ho_{1b} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 3) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the upper socioeconomic status females. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtest I, Subtest III and total raw scores; therefore, hypotheses related to these subtests

TABLE 3

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM SCORES
OBTAINED BY UPPER SOCIOECONOMIC STATUS STUDENTS ON FOUR SUBTESTS
OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Male (N=35)					Female (N=35)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	10.31	2.60	11.60	0.74	3.084*	10.69	1.32	11.51	0.82	2.930*
Subtest II-- Crossing out letter symbols	11.23	2.12	11.74	0.50	1.493	11.66	0.87	11.91	0.28	1.855
Subtest III-- Vocabulary and fol- lowing instructions	18.57	1.44	19.31	0.87	3.132*	18.43	1.29	18.91	1.07	2.561*
Subtest IV-- Identification of letters and word symbols	16.80	3.79	18.09	1.58	2.117*	17.43	2.06	17.43	2.16	0.000
Total Score	56.91	8.43	60.74	2.51	2.902*	58.20	3.83	59.77	3.16	3.222*

*Significant beyond the .05 level

were rejected. There was no significant mean differences between object-form and paper-pencil raw scores on the Subtests II and IV; therefore, the hypotheses related to these two subtests were accepted.

Ho_{1c} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 4) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the middle socioeconomic status males on Subtest I and total raw scores; therefore, the hypotheses related to these subtests were rejected. There were no significant mean differences between paper-pencil and object-form raw scores on Subtests II, III, and IV; therefore, the hypotheses related to these three subtests were accepted.

Ho_{1d} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The statistical results shown in Table 4 indicated that fewer significant mean differences existed between the paper-pencil and object-form raw scores of the middle socioeconomic status females. However, these students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtest I and total raw scores; therefore, the hypotheses related to these subtests were rejected. There were no significant mean differences between object-form and paper-pencil raw scores on the Subtests II, III, and IV; therefore, the hypotheses related to these subtests were accepted.

TABLE 4
A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM SCORES
OBTAINED BY MIDDLE SOCIOECONOMIC STATUS STUDENTS ON FOUR SUBTESTS
OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Male (N=35)					Female (N=35)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	10.66	2.22	11.57	0.74	2.500*	10.29	2.30	11.29	0.99	2.464*
Subtest II-- Crossing out letter symbols	11.26	2.13	11.74	0.78	1.841	11.66	1.26	11.91	0.28	1.388
Subtest III-- Vocabulary and fol- lowing instructions	18.63	1.09	18.91	1.04	1.530	18.60	1.09	18.77	1.14	0.826
Subtest IV-- Identification of letters and word symbols	16.69	4.41	17.60	2.70	1.508	16.69	2.98	17.34	2.39	1.828
Total Score	57.23	6.79	59.83	3.71	3.142*	57.23	5.95	59.31	3.59	2.949*

*Significant beyond the .05 level

Ho_{1e} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status male students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 5) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the lower socioeconomic status males. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected.

Ho_{1f} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status female students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 5) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the lower socioeconomic status females. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there were no significant mean differences between object-form and paper-pencil raw scores on the Subtests II and III; therefore, the hypotheses related to these two subtests were accepted.

Ho_{1g} There are no statistically significant mean differences between the raw scores of the upper socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

TABLE 5

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM SCORES
OBTAINED BY LOWER SOCIOECONOMIC STATUS STUDENTS ON FOUR SUBTESTS
OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Male (N=35)					Female (N=35)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	10.43	2.31	11.54	0.82	2.931*	9.86	2.51	11.51	0.82	3.807*
Subtest II-- Crossing out letter symbols	11.17	1.47	11.74	0.89	3.452*	11.71	0.67	11.89	0.40	1.646
Subtest III-- Vocabulary and fol- lowing instructions	17.86	1.29	18.74	1.20	5.122*	17.71	1.18	18.11	1.16	1.774
Subtest IV-- Identification of letters and word symbols	14.80	3.78	17.06	2.24	3.989*	15.74	3.60	17.23	2.03	2.639*
Total Score	54.26	6.98	59.09	3.65	5.230*	55.03	5.33	58.74	2.79	4.424*

*Significant beyond the .05 level

The results of the statistical analysis (Table 6) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the upper socioeconomic status students. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, II, III, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant mean difference between object-form and paper-pencil scores on the Subtest IV; therefore the hypothesis related to Matching was accepted.

Ho_{1h} There are no statistically significant mean differences between the raw scores of the middle socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 6) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the middle socioeconomic status students. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, II, IV and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there were no significant mean differences between object-form and paper-pencil raw scores on the Subtest III; therefore, the hypothesis related to this subtest was accepted.

Ho_{1i} There are no statistically significant mean differences between the raw scores of the lower socioeconomic status students on each of the four subtests and total score on the Lee-Clark Reading Readiness Test and their respective scores on the object-form of the test.

The results of the statistical analysis (Table 6) indicated that significant mean differences existed between the paper-pencil and

TABLE 6

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM SCORES
OBTAINED BY STUDENTS FROM THREE SOCIOECONOMIC STATUS LEVELS ON FOUR SUBTESTS
OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Upper (N=70)					Middle (N=70)					Lower (N=70)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	10.50	2.06	11.56	0.77	4.200*	10.47	2.25	11.43	0.88	3.529*	10.14	2.41	11.53	0.81	4.800*
Subtest II-- Crossing out letter symbols	11.44	1.62	11.83	0.42	2.088*	11.46	1.75	11.83	0.59	2.318*	11.44	1.16	11.81	0.69	3.706*
Subtest III-- Vocabulary and fol- lowing instructions	18.50	1.36	19.11	0.99	4.066*	18.61	1.08	18.84	1.09	1.655	17.79	1.23	18.43	1.21	4.456*
Subtest IV-- Identification of letters and word symbols	17.11	3.04	17.76	1.91	1.746	16.69	3.74	17.47	2.54	2.245*	15.27	3.70	17.14	2.12	4.690*
Total Score	57.56	6.53	60.26	2.88	3.796*	57.23	6.34	59.57	3.63	4.327*	54.64	6.18	58.91	3.23	6.855*

*Significant beyond the .05 level

object-form raw scores of the lower socioeconomic status students. These students had object-form raw scores which were significantly higher than their paper-pencil raw scores in Subtests I, II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected.

Ho_{1j} There are no statistically significant mean differences between the raw gain scores of the upper and the middle socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The results of the statistical analysis (Table 7) indicated that there were no significant mean differences between the paper-pencil and object-form raw gain scores computed for the students from the upper socioeconomic status and the middle socioeconomic status; therefore, the hypotheses relating to these differences were accepted.

Ho_{1k} There are no statistically significant mean differences between the raw gains scores of the upper and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The results of the statistical analysis (Table 7) indicated that the lower socioeconomic students made significantly greater paper-pencil/object-form gains in Subtest IV than the upper socioeconomic students. Therefore, the hypothesis related to this subtest was rejected. However, there were no significant mean differences between the two groups' gain scores on the Subtests I, II, III, and total raw scores; therefore, the hypotheses related to these subtests were accepted.

Ho_{1l} There are no statistically significant mean differences between the raw gain scores of the middle and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

TABLE 7

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM GAIN SCORES
OBTAINED BY STUDENTS FROM THREE SOCIOECONOMIC STATUS LEVELS ON FOUR SUBTESTS
OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Upper vs Middle (N=70)					Upper vs Lower (N=70)					Middle vs Lower (N=70)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	1.06	2.11	0.96	2.27	-0.271	1.06	2.11	1.39	2.42	0.858	0.96	2.27	1.39	2.42	1.083
Subtest II-- Crossing out letter symbols	0.39	1.54	0.37	1.34	-0.061	0.39	1.54	0.37	0.84	-0.071	0.37	1.34	0.37	0.84	0.000
Subtest III-- Vocabulary and fol- lowing instructions	0.61	1.27	0.23	1.17	-1.861	0.61	1.27	0.64	1.20	0.139	0.23	1.17	0.64	1.20	2.054*
Subtest IV-- Identification of letters and word symbols	0.64	3.08	0.79	2.93	0.282	0.64	3.08	1.87	3.34	2.265*	0.79	2.93	1.87	3.34	2.047*
Total Score	2.70	5.95	2.34	4.53	-0.400	2.70	5.95	4.27	5.21	1.662	2.34	4.53	4.27	5.21	2.337*

*Significant beyond the .05 level

The results of the statistical analysis (Table 7) indicated that the lower socioeconomic students made significantly greater paper-pencil/object-form gains in Subtests III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there were no significant mean differences between the paper-pencil/object-form gain scores computed for the students from the middle socioeconomic status and the paper-pencil/object-form gain scores computed in Subtests I and II for the students from the lower socioeconomic status. Therefore, the hypotheses relating to these different subtests were accepted. A comparison of the mean differences between the paper-pencil/object-form gain scores obtained by the students (Table 8) revealed no significant differences when analyzed by sex.

Ho_{1m} There are no statistically significant mean differences between the raw scores of the total male population for each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The results of the statistical analysis (Table 9) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the total male population. In all instances these students had object-form raw scores which were significantly higher than their paper-pencil raw scores on Subtests I, II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests and total raw scores were rejected.

Ho_{1n} There are no statistically significant mean differences between the raw scores of the total female population for each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The results of the statistical analysis (Table 9) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the total female population. These students

TABLE 8

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM
GAIN SCORES OBTAINED BY SEXES FROM THREE SOCIOECONOMIC STATUS LEVELS
ON FOUR SUBTESTS OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Male N=105		Female N=105		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation	
Subtest I-- Matching letter symbols	1.10	2.28	1.16	2.26	0.182
Subtest II-- Crossing out letter symbols	0.52	1.57	0.23	0.86	-1.690
Subtest III-- Vocabulary and fol- lowing instructions	0.64	1.20	0.35	1.22	-1.706
Subtest IV-- Identification of letters and word symbols	1.49	3.52	0.71	2.70	-1.783
Total Score	3.75	6.19	2.46	4.16	-1.779

TABLE 9

A COMPARISON OF THE MEAN DIFFERENCES BETWEEN PAPER-PENCIL AND OBJECT-FORM RAW SCORES
OBTAINED BY MALES, FEMALES, AND TOTAL POPULATION OF STUDENTS
ON FOUR SUBTESTS OF THE LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Total Males (N=105)					Total Females (N=105)					Total Students (N=210)				
	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value	Paper-pencil Scores		Object-form Scores		t-Value
	Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation	Mean	Standard Deviation		Mean	Standard Deviation			
Subtest I-- Matching letter symbols	10.47	2.36	11.57	0.76	4.954*	10.28	2.11	11.44	0.88	5.285*	10.37	2.24	11.51	0.82	7.278*
Subtest II-- Crossing out letter symbols	11.22	1.91	11.74	0.73	3.434*	11.68	0.96	11.91	0.33	2.745*	11.45	1.53	11.82	0.57	4.293*
Subtest III-- Vocabulary and fol- lowing instructions	18.35	1.32	18.99	1.06	5.442*	18.25	1.24	18.60	1.17	2.940*	18.30	1.28	18.80	1.13	5.883*
Subtest IV-- Identification of letters and word symbols	16.11	4.07	17.59	2.25	4.322*	16.62	3.00	17.33	2.18	2.713*	16.36	3.58	17.46	2.21	5.055*
Total Score	55.13	7.49	59.89	3.37	6.207*	56.82	5.24	59.28	3.19	6.047*	56.48	6.45	59.67	3.29	8.454*

*Significant beyond the .05 level

had object-form raw scores which were significantly higher than their paper-pencil raw scores on Subtests I, II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests and total raw scores were rejected.

Ho₁₀ There are no statistically significant mean differences between the raw scores of the total student population for each of the four subtests and the total scores on the object-form test and the Lee-Clark Reading Readiness Test.

The results of the statistical analysis (Table 9) indicated that significant mean differences existed between the paper-pencil and object-form raw scores of the total student population. In all cases the students had object-form raw scores which were significantly higher than their paper-pencil raw scores on Subtests I, II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests and total raw scores were rejected.

Summary of Results of Hypothesis Ho₁

The results presented in Tables 3 through 9 indicate that nearly all sex groups at each socioeconomic level performed better on the object-form version of the Lee-Clark Reading Readiness Test material than on the paper-pencil version. However, the individual presentations of each subhypothesis makes a comprehensive picture of the overall results difficult. The t values computed for each comparison are presented collectively in Table 10 as a means of summarizing the results obtained in testing the fifteen subhypotheses of Hypothesis Ho₁.

The significant t values presented in Table 10 show definite patterns along both socioeconomic and sex dimensions. It was obvious that differences between the paper-pencil and object-form scores were consistently different on some subtests, while other subtests show less

TABLE 10

**SUMMARY OF STATISTICAL RESULTS OBTAINED FROM TESTING
THE FIFTEEN SUBHYPOTHESES OF HYPOTHESIS NO. 1**

Groups	Readiness Subtests and Corresponding t-Values				
	Subtotal I	Subtotal II	Subtotal III	Subtotal IV	Total
<u>Upper Class</u>					
Males	3.084*	1.493	3.132*	2.117*	2.902*
Females	2.830*	1.855	2.561*	0.000	3.222*
<u>Middle Class</u>					
Males	2.500*	1.841	1.530	1.508	3.142*
Females	2.464*	1.388	0.826	1.828	2.949*
<u>Lower Class</u>					
Males	2.931*	3.452*	5.122*	3.989*	5.230*
Females	3.807*	1.646	1.774	2.639*	4.424*
Total Upper Cl.	4.200*	2.088*	4.066*	1.746	3.796*
Total Middle Cl.	3.529*	2.318*	1.655	2.245*	4.327*
Total Lower Cl.	4.800*	3.706*	4.456*	4.690*	6.855*
Total Males	4.954*	3.434*	1.093	0.637	6.207*
Total Females	5.285*	2.745*	2.940*	2.713*	6.047*
Total Students	7.278*	4.293*	5.883*	5.055*	8.454*
Upper vs Middle	-0.271	-0.061	-1.861	0.282	-0.400
Upper vs Lower	0.858	-0.071	0.139	2.265*	1.662
Middle vs Lower	1.083	0.000	2.054*	2.047*	2.215*

*Significant beyond the .05 level

of a difference. The results may best be summarized by socioeconomic level, sex, and total groups.

The results between the paper-pencil and object-form tests on the various subtest scores of socioeconomic groups were as follows: (1) Subtest I--significant differences existed for all three socioeconomic groups; (2) Subtest II--significant differences existed only for the males in the lower socioeconomic group (3.452), no significant differences in the other groups for this subtest; (3) Subtest III--significant differences existed in the upper group males (3.132) and females (2.561) and in the males in the lower socioeconomic group (5.122). There were no significant differences in the remaining socioeconomic groups for this subtest. (4) Subtest IV--significant differences existed in the lower socioeconomic group males (3.989), females (2.639), and for the males in the upper socioeconomic group (2.117). Significant differences existed in all socioeconomic groups in the total score.

A summary of the comparisons made between the paper-pencil total raw scores and the object-form raw scores recorded for socioeconomic groups showed that the greatest improvement resulting from the object-form presentations was experienced by the lower socioeconomic group (4.27 total points increase), the second highest increase in the upper socioeconomic group (2.70 total points), and the least increase in the middle socioeconomic group (1.84 total points). It should be noted, however, that the amount of increase experienced by all three socioeconomic groups was significant. Also, the overall increase experienced by the male participants (3.42 total points) was higher

than the increase experienced by the female participants (2.45 total points). These results indicate that the object-form version of the Lee-Clark Reading Readiness Test had a facilitating effect upon the performance of all the students in this study. The males in upper and lower socioeconomic groups appeared to benefit the most of all the groups being tested. Also, a summary of the comparisons between the paper-pencil and object-form tests for the upper, middle, and lower classes showed for individual Subtests I, II, III, IV, and total raw scores significant differences existed in all cases with the exception of the total middle class in Subtest III (1.655).

A summary of the comparisons between the paper-pencil and object-form tests for total males, females, and students showed for Subtests I, II, III, IV and total scores that significant differences existed in all cases with the exception of the total males in Subtest III (1.093) and Subtest IV (0.637).

The comparisons between the paper-pencil and object-form tests between the upper vs middle, upper vs lower, and middle vs lower for Subtests I, II, III, IV, and total scores, that no significant differences existed with the exception of that between the middle vs lower in Subtest III (2.054), IV (2.047), and total score (2.215) and between the upper vs lower in Subtest IV (2.265).

In summary, these results indicate that the object-form version of the Lee-Clark Reading Readiness Test had more of an effect (result) upon the performance of all the students used in this study. However, less differences seemed to exist in the middle class, particularly on Subtests II, III, and IV. Also, the results indicate that the females

experienced less of a significant difference between the paper-pencil and object-form test than the males. The results are further explored in testing the second general hypothesis, and the conclusions drawn from all findings which are presented in more detail in the final chapter.

Hypothesis Ho₂

Hypothesis Ho₂ was concerned with the relationships (correlations) between the paper-pencil and object-form scores recorded for groups participating in the study. The second general null hypothesis was stated as follows:

- Ho₂ There are no statistically significant correlations among the respective groups on each of the four subtests and total raw scores on the Lee-Clark Reading Readiness Test and an object-form of the test among three socioeconomic status groups by sex.

The second general hypothesis was reduced to fifteen subhypotheses to facilitate its testing. The null proposition of each subhypothesis is stated in conjunction with the presentation of the statistical results.

- Ho_{2a} There are no statistically significant correlations between the raw scores of the upper socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The results (Table 11) indicated there were significant relationships on two subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil scores were on Subtests III and IV and total raw scores; therefore, the hypotheses related to these three subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtest I and II and the hypotheses related to these subtests were accepted.

TABLE 11

PAPER-PENCIL AND OBJECT-FORM CORRELATION COEFFICIENTS FOR STUDENTS FROM
THREE SOCIOECONOMIC STATUS LEVELS ON LEE-CLARK READING READINESS TEST

Groups	Subtests and Corresponding Correlations ("r")				
	Subtotal I	Subtotal II	Subtotal III	Subtotal IV	Total
<u>Upper Class</u>					
Males	.314	.277	.347*	.328*	.390*
Females	-.172	.353*	.562*	.387*	.675*
<u>Middle Class</u>					
Males	.248	.819*	.466*	.584*	.713*
Females	.106	.656*	.398*	.706*	.721*
<u>Lower Class</u>					
Males	.248	.760*	.663*	.478*	.631*
Females	.080	.421*	.348*	.411*	.388*
Total Upper Cl.	.123	.308*	.454*	.295*	.414*
Total Middle Cl.	.175	.780*	.430*	.623*	.714*
Total Lower Cl.	.161	.703*	.512*	.448*	.536*
Total Males	.269*	.616*	.506*	.507*	.576*
Total Females	.038	.456*	.482*	.496*	.607*
Total Students	.153	.595*	.492*	.490*	.571*

*Significant beyond the .05 level

Ho_{2b} There are no statistically significant correlations between the raw scores of the upper socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the upper socioeconomic females' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with pencil-paper raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on Subtest I, and the hypothesis related to this subtest was accepted.

Ho_{2c} There are no statistically significant correlations between the raw scores of the middle socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the middle socioeconomic males' paper-pencil and object-form raw scores on three subtests and total raw scores were from Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there were no significant correlations between the paper-pencil and object-form raw scores on the Subtests I, and the hypotheses related to this subtest was accepted.

Ho_{2d} There are no statistically significant correlations between the raw scores of the middle socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the middle socioeconomic and total raw scores of the Lee-Clark Reading Readiness Test. Object-form scores were from the Subtests II, III, IV and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on Subtest I; therefore, the hypothesis related to this subtest was accepted.

Ho_{2e} There are no statistically significant correlations between the raw scores of the lower socioeconomic status male students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the lower socioeconomic males' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtests I, and the hypothesis related to this subtest was accepted.

Ho_{2f} There are no statistically significant correlations between the raw scores of the lower socioeconomic status female students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the lower socioeconomic females' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtest I, and the hypothesis related to this subtest was accepted.

Ho_{2g} There are no statistically significant correlations between the raw scores of the upper socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the upper socioeconomic students' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtest I, and the hypothesis related to this subtest was accepted.

Ho_{2h} There are no statistically significant correlations between the raw scores of the middle socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the middle socioeconomic students' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on Subtest I, and the hypothesis related to this subtest was accepted.

Ho_{2i} There are no statistically significant correlations between the raw scores of the lower socioeconomic status students on each of the four subtests and total scores on the Lee-Clark Reading Readiness Test and their respective scores on an object-form of the test.

The statistical results presented in Table 11 indicated there were significant relationships between the lower socioeconomic students' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtest I, and the hypotheses related to these subtests were accepted.

Ho_{2j} There are no statistically significant correlations between the gain scores of the upper and the middle socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 12 indicated that there were significant differences between the paper-pencil and object-form correlations computed for the two groups. The upper socioeconomic correlations were significantly higher than those computed for the middle socioeconomic group on Subtest II, IV and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there were no significant differences between the two groups' correlations computed for the Subtests I and III, therefore, the hypotheses related to these subtests were accepted.

Ho_{2k} There are no statistically significant correlations between the gain scores of the upper and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 12 indicated that there were significant differences between the paper-pencil and object-form correlations computed for the two groups. The upper socioeconomic students showed a correlation which was significantly higher than the correlation computed for the lower socioeconomic students on the Subtests II; therefore, the hypotheses related to these subtests were rejected. However, there were no significant differences between the two groups' correlations computed for the Subtests I, III, IV and total raw scores; therefore, the hypotheses related to these subtests were accepted.

TABLE 12

A COMPARISON OF THE PAPER-PENCIL AND OBJECT-FORM CORRELATION COEFFICIENTS
COMPUTED FOR STUDENTS FROM THREE SOCIOECONOMIC STATUS LEVELS ON
FOUR SUBTESTS AND TOTAL OF LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Upper vs Middle (N=70)					Upper vs Lower (N=70)					Middle vs Lower (N=70)				
	Upper Correlations		Middle Correlations		Z-Value	Upper Correlations		Lower Correlations		Z-Value	Middle Correlations		Lower Correlations		Z-Value
	Corre- lation	Fishers Z	Corre- lation	Fishers Z		Corre- lation	Fishers Z	Corre- lation	Fishers Z		Corre- lation	Fishers Z	Corre- lation	Fishers Z	
Subtest I-- Matching letter symbols	.123	0.124	.175	0.187	0.365	.123	0.124	.161	0.162	0.220	.175	0.187	.161	0.162	-0.087
Subtest II-- Crossing out letter symbols	.308	0.318	.780	1.040	4.178*	.308	0.318	.703	0.873	3.212*	.780	1.040	.703	0.873	-0.967
Subtest III-- Vocabulary and fol- lowing instructions	.454	0.490	.430	0.459	-0.179	.454	0.490	.512	0.565	0.434	.430	0.459	.512	0.565	0.614
Subtest IV-- Identification of letters and word symbols	.295	0.314	.623	0.731	2.414*	.295	0.314	.448	0.482	0.972	.623	0.731	.448	0.482	-1.441
Total Score	.414	0.440	.714	0.996	3.218*	.414	0.440	.536	0.599	0.920	.714	0.996	.536	0.599	2.298

*Significant beyond the .05 level

- Ho_{2l} There are no statistically significant correlations between the gain scores of the middle and the lower socioeconomic status students on each of the four subtests and the total score on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 12 indicated that there were no significant differences between the paper-pencil and object-form correlations computed for the two groups; therefore, the hypotheses related to the subtests and total raw scores were accepted.

- Ho_{2m} There are no statistically significant correlations between the four subtests and the raw scores for the total male population on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 13 indicated there were significant relationships between the total male populations' paper-pencil and object-form raw scores on the four subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from Subtests I, II, III, IV and total raw scores; therefore the hypotheses related to these subtests were rejected.

- Ho_{2n} There are no statistically significant correlations between the four subtests and the raw scores for the total female population on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 13 indicated there were significant relationships between the total female populations' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from the Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there

TABLE 13

A COMPARISON OF THE CORRELATIONS BETWEEN PAPER-PENCIL AND OBJECT-FORM RAW SCORES
OBTAINED BY MALES, FEMALES, AND TOTAL POPULATION OF STUDENTS ON FOUR SUBTESTS
AND TOTAL OF LEE-CLARK READING READINESS TEST

Lee-Clark Reading Readiness Test Sub-Areas	Total Males (N=105)					Total Females (N=105)					Total Students (N=210)				
	Paper-pencil Scores		Object-form Scores		Correlation Coefficient	Paper-pencil Scores		Object-form Scores		Correlation Coefficient	Paper-pencil Scores		Object-form Scores		Correlation Coefficient
	Standard		Standard			Standard		Standard			Standard		Standard		
	Mean	Deviation	Mean	Deviation		Mean	Deviation	Mean	Deviation		Mean	Deviation	Mean	Deviation	
Subtest I-- Matching letter symbols	10.47	2.36	11.57	0.76	.269*	10.28	2.11	11.44	0.88	.038	10.37	2.24	11.51	0.82	.153
Subtest II-- Crossing out letter symbols	11.22	1.91	11.74	0.73	.616*	11.68	0.96	11.91	0.33	.456*	11.45	1.63	11.82	0.67	.595*
Subtest III-- Vocabulary and fol- lowing instructions	18.35	1.32	18.99	1.06	.506*	18.25	1.24	18.60	1.17	.482*	18.30	1.28	18.80	1.13	.492*
Subtest IV-- Identification of letters and word symbols	16.11	4.07	17.59	2.25	.507*	16.62	3.03	17.33	2.18	.496*	16.36	3.58	17.46	2.21	.490*
Total Score	56.13	7.49	59.89	3.37	.576*	56.82	6.24	59.28	3.19	.607*	56.48	6.45	59.57	3.29	.572*

*Significant beyond the .05 level

was no significant correlation between the paper-pencil and object-form raw scores on Subtest I, and the hypothesis related to this subtest was accepted.

Ho₂₀ There are no statistically significant correlations between the four subtests and the raw scores for the total student population on the object-form test and the Lee-Clark Reading Readiness Test.

The statistical results presented in Table 13 indicated there were significant relationships between the total student populations' paper-pencil and object-form raw scores on three subtests and total raw scores of the Lee-Clark Reading Readiness Test. Object-form raw scores which were significantly correlated with paper-pencil raw scores were from Subtests II, III, IV, and total raw scores; therefore, the hypotheses related to these subtests were rejected. However, there was no significant correlation between the paper-pencil and object-form raw scores on the Subtest I, and the hypothesis related to this subtest was accepted.

Summary and Discussion of Results of Hypothesis Ho₂

The results presented (Tables 11 through 13) indicated that both sex groups at each socioeconomic level had raw scores from the object-form version of the Lee-Clark Reading Readiness Test which were significantly correlated with their raw scores from the paper-pencil version of the same test. The correlation coefficients computed between the participants' paper-pencil and object-form raw scores are presented collectively in Table 10 as a means of summarizing the results obtained in testing the fifteen subhypotheses of Hypothesis Ho₂.

The correlation values ("r") (Table 11) show a definite pattern of significance. It should be further noted, however, that these patterns did not adhere to socioeconomic categories. For example, there were significant correlations between the paper-pencil and object-form Subtest II, III, IV, and total raw scores with the exception of males in the upper socioeconomic status level where no significant correlation existed. Also, there were no significant correlations between the paper-pencil and object-form raw scores of all three socioeconomic levels for Subtest I.

A comparison of the overall correlation coefficients computed for the three socioeconomic groups was made to determine if the paper-pencil/object-form correlations computed for each socioeconomic group were significantly different (Table 12). The correlation computed between the middle socioeconomic group's paper-pencil/object-form raw scores ($r=0.714$) was significantly higher than the correlation computed for either upper socioeconomic group ($r=0.414$) or for the lower socioeconomic group ($r=0.536$) on the same raw scores, although all socioeconomic groups' correlations were significant.

A comparison of the overall correlation coefficient computed for males, females, and total population of students was made to determine if the paper-pencil/object-form correlations computed were significantly different (Table 13). The correlations computed showed that the females ($r=0.607$) was higher than those computed for the males ($r=0.576$), although both sets of correlations were significant.

The data contained in Table 13 further shows less variability by sex and total students for the object-form test than for the paper-pencil test. While the total test results range from 56.13 to 56.82 with standard deviations ranging from 5.24 to 7.49 on the paper pencil test, the respective ranges for the object-form test are 59.28 to 59.89 and 3.19 to 3.37. With the exception of Subtest III, the range of the mean values by sex and total students is less for the object-form test than for the paper-pencil test.

Because of the narrow range and little variation this could account for the low correlations for Subtest I. On the other hand, all other correlations between the two forms of the subtests yielded significant correlations which indicates high reliability.

Cronbach stated that according to test theory, the coefficient of equivalence is the most desirable index of test reliability since it involves two different representative samples of items.¹

With further tryouts on other samples irrespective of socio-economic level by sex, it is perhaps possible that the object form of the test would show high reliability. In view of the indications of significant reliabilities, it is conjectured that the predictive validity of the adopted instrument would be as successful as the paper-pencil form.

¹Lee J. Cronbach, Essentials of Psychological Testing (2nd ed.; New York; Harper and Brothers, 1960), pp. 140-41.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The basic purpose of this study was to assess the level of individual pupil prereading ability using object-forms and paper-pencil tests to conclude whether some readers are limited in answering questions on tests when it is the format of presentation rather than the existing knowledge of the correct answer. It was determined if there were significant differences and significant correlations among the raw scores of kindergarten students from different socioeconomic levels and sexes on the Lee-Clark Reading Readiness Test (1962 Revision) and an object-form of the identical test material. The kindergarten students from the Edmond Public Schools were classified into three socioeconomic status as determined by H. J. Ogburn's Index of Social Position. Samples of one hundred five females (N=105) were tested using the paper-pencil method using the Lee-Clark Reading Readiness Test (1962 Revision) items. Samples of thirty-five boys (N=35) and thirty-five girls (N=35) were randomly drawn from each of the three socioeconomic groups. Test items were alternately presented to the groups by trained test administrators using the paper-pencil and object-form materials.

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Primary comparisons were made by determining the differences and relationships among the four subtests and total scores from the paper-pencil presentation and the four subtest and total scores from the object-form presentation. The results of testing the first general hypothesis indicated that in most instances both sex groups at each socioeconomic level performed better on the object-form version of the Lee-Clark Reading Readiness Test material than on the paper-pencil version. A summary of the comparisons made between the paper-pencil total scores and the object-form total values recorded for each socioeconomic group showed that the greatest differences resulting from the object-form presentations was experienced by the lower socioeconomic group (Table 5). The upper socioeconomic group experienced the second greatest differences (Table 3), and the middle socioeconomic group experienced the least differences (Table 2). However, the differences between the tests experienced by all three socioeconomic sex groups on the total scores were significant.

The results (total value) in all but one instance for Subtest II showed no significant differences for all the socioeconomic sex groups; that exception was on the lower socioeconomic male group (total=3.452, Table 5). Also, the results (total value) for the middle socioeconomic sex groups showed significant differences on Subtest I only: Males (total=2.500) and females (total=2.464, Table 4). However, it should be noted that in all socioeconomic sex groups the total raw scores showed significant differences between the paper-pencil and object-form tests (Tables 3,4,5) of the Lee-Clark Reading Readiness Test.

Also, a summary of the comparisons made between the paper-pencil total scores and the object-form total scores recorded for each

socioeconomic group showed that the greatest improvement resulting from the object-form presentations was experienced by the lower socioeconomic group (4.27 total points increase); the upper socioeconomic group experienced the second highest increase (2.70 total points); and the middle socioeconomic group experienced the least increase (1.84). However, the amount of increase experienced by all three socioeconomic groups was significant. The overall increase experienced by the male participants (3.42 total points) was higher than the increase experienced by the female participants (2.45 total points). Again, it should be noted that both sex groups showed significant gains from the paper-pencil administration to the object-form administration of the Lee-Clark Reading Readiness Test.

The results of testing the second general hypothesis indicated that both sex groups at each socioeconomic level had scores from the object-form of the Lee-Clark Reading Readiness Test which were significantly correlated to their scores from the paper-pencil version of the same test. A summary of the correlations computed between the total scores show that the highest paper-pencil/object-form correlations were computed for the middle socioeconomic students; the lower socioeconomic group showed the second highest correlations; and the upper socioeconomic group showed the lowest correlation coefficients, although the correlations were significant for all sex groups at all socioeconomic levels. When the correlation coefficients were computed by sex groups, the correlations computed for the males showed the highest correlation, although both sets of correlations were significant.

Comparisons of the correlation coefficients computed for each of the three socioeconomic groups were made to determine if the

paper-pencil/object-form correlation computed for each socioeconomic group's total scores was significantly different than the paper-pencil/object-form correlation computed between the other groups' total raw scores. The middle socioeconomic group's paper-pencil/object-form correlation on total raw scores ($r=0.714$) was significantly higher than the correlation computed for either the lower socioeconomic group ($r=0.536$) or the upper socioeconomic group on their paper-pencil and object-form total raw scores ($r=0.414$). However, except for Subtest II, there were no significant differences between the correlations computed for the upper and lower socioeconomic groups.

Conclusions

The following conclusions were derived from the results of the study:

1. Each of the socioeconomic status male groups performed at a higher level on the object-form of the Lee-Clark Reading Readiness Test in each of the subtests.
2. Each of the socioeconomic status female groups performed at a higher level on the object-form of the test for each subtest. The exception was found in Subtest IV for the upper female socioeconomic group. For this subtest the test results were identical.
3. Each of the socioeconomic status total students performed at a higher level on the object-form of the readiness test for each of the subtests.
4. Performance differences of the students was comparable for each socioeconomic group for Subtests I and II. Subtest III results were comparable for the upper and lower groups.

5. The total male, female, and student populations performed at a higher level on the object-form of the readiness test for each of the subtests.

6. Males of each of the socioeconomic levels reflected a significant increase in performance on the two forms of the test for Subtest I and total raw score for each of the socioeconomic groups. In addition they reflected a significant increase in performance for Subtest III and IV of the upper socioeconomic group and Subtest II, III, and IV for the lower socioeconomic group.

7. There is a significant increase between performance on Subtest I and total raw score for each of the socioeconomic levels of females and for Subtest III of the upper socioeconomic females and Subtest IV for the lower socioeconomic status females.

8. Students of the upper, middle, and lower socioeconomic status levels reflected a significant increase in performance on the two forms of the test in all subtests and total raw scores, with the exception of Subtest IV for the upper socioeconomic group, and Subtest III for the middle socioeconomic group.

9. The only significant differences between the performance on subtests of the two forms of the test between upper vs middle, upper vs lower, and middle vs lower was for Subtest II for upper vs lower, and Subtests III and IV and total raw scores for the middle vs lower socioeconomic group.

10. Male, female and total student groups of the population reflected a significant increase between their performances on the two forms of the test in all the subtests and total raw scores.

Recommendations

Similar studies should be conducted which would yield additional information and expand the amount of knowledge yielded in this and similar studies. Other findings would benefit further this particular research effort. Specifically, the recommendations are as follows:

1. Conduct a study of only the upper and lower socioeconomic levels to further support the results indicated in this study of the socioeconomic differences.
2. Conduct a study of all three socioeconomic levels but performed on a culturally-oriented race.
3. Conduct a study of all three socioeconomic levels but performed on a rural-community facility.
4. Conduct a study where I.Q. scores rather than socioeconomic status levels is the variable for establishing levels for testing.

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APPENDIX A

Survey Instrument Used in Determining Students' Socioeconomic Status

Parent's Signature _____

APPENDIX B

**PAPER-PENCIL AND OBJECT-FORM RAW SCORES FOR EACH SEX GROUP
OF THE THREE SOCIOECONOMIC LEVELS FROM THE
LEE-CLARK READING READINESS TEST**

TABLE 14

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE UPPER
SOCIOECONOMIC STATUS MALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	12	12	16	19	59	12	12	20	18	62
2	10	9	19	20	58	12	12	20	19	63
3	0	0	15	2	17	12	11	19	18	60
4	2	12	16	13	43	10	12	17	17	56
5	11	12	20	18	61	12	12	20	18	62
6	12	12	19	20	63	10	11	20	20	61
7	10	12	20	19	61	12	12	19	18	61
8	9	12	19	19	59	12	12	20	18	62
9	10	12	17	13	52	11	12	19	17	59
10	10	12	20	16	58	12	11	19	18	60
11	10	12	19	17	58	12	10	18	19	59
12	12	12	20	17	61	12	12	20	19	63
13	12	11	20	19	62	12	11	18	19	60
14	9	11	18	19	57	10	11	19	18	58
15	12	12	20	15	59	12	12	20	19	63
16	10	11	19	20	60	12	12	20	18	62
17	12	10	18	16	56	11	12	17	12	52
18	12	12	20	20	64	12	12	20	20	64
19	12	12	19	19	62	12	12	19	20	63
20	12	11	18	19	60	12	12	19	17	60
21	12	12	19	17	60	12	12	20	19	63
22	9	12	18	16	55	12	11	20	18	61
23	10	12	20	17	59	12	12	20	17	61
24	9	12	15	6	42	10	12	19	17	58
25	11	11	17	14	53	12	12	18	17	59
26	11	12	19	17	59	12	12	19	19	62
27	12	12	20	20	64	12	12	19	19	62
28	12	11	20	18	61	12	12	20	19	63
29	12	12	20	16	60	12	12	20	16	60
30	12	9	18	16	55	12	11	19	15	57
31	11	11	19	20	61	12	12	20	20	64
32	10	12	18	17	57	11	12	19	18	60
33	9	12	19	17	57	10	12	20	18	60
34	10	12	18	17	57	11	12	20	19	62
35	12	12	18	20	62	12	12	20	20	64
Total	361	393	650	588	1992	406	411	676	633	2126
Mean	10.31	11.23	18.57	16.80	56.91	11.60	11.74	19.31	18.09	60.74
Standard Deviation	2.60	2.12	1.44	3.79	8.43	0.74	0.50	0.87	1.58	2.51

TABLE 15

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE MIDDLE
SOCIOECONOMIC STATUS MALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	10	11	20	2	43	11	10	19	18	58
2	7	10	19	13	49	11	11	18	17	57
3	8	11	19	18	56	12	12	18	18	60
4	12	12	19	18	61	12	12	20	18	62
5	12	12	19	20	63	12	12	20	20	64
6	12	11	18	18	59	12	12	19	20	63
7	7	12	18	16	53	12	12	19	13	56
8	10	11	17	14	52	11	12	19	19	61
9	12	12	19	20	63	12	12	20	20	64
10	12	12	17	19	60	12	12	18	19	61
11	12	12	18	19	61	12	12	19	16	59
12	12	12	19	19	62	12	12	18	17	59
13	1	10	19	14	44	11	12	18	13	54
14	9	12	16	3	40	10	12	17	6	45
15	12	12	19	19	62	12	12	17	16	57
16	10	11	20	17	58	12	11	20	17	60
17	10	12	18	19	59	12	12	18	18	60
18	12	12	19	20	63	12	12	20	20	64
19	12	12	20	19	63	12	12	19	20	63
20	11	12	18	18	59	10	12	18	20	60
21	10	12	19	13	54	12	12	20	18	62
22	12	12	19	20	63	10	12	20	17	59
23	12	12	19	17	60	12	12	17	18	59
24	11	11	18	20	60	12	12	19	17	60
25	12	12	17	17	58	10	12	17	17	56
26	12	12	19	20	63	12	12	18	20	62
27	10	8	16	8	42	12	12	19	16	59
28	11	12	20	17	60	12	12	20	17	61
29	12	12	20	20	64	12	12	20	20	64
30	12	12	18	20	62	12	11	19	19	61
31	12	12	19	20	63	12	12	20	20	64
32	12	12	18	18	60	12	12	19	19	62
33	12	12	20	16	60	12	12	20	18	62
34	10	0	20	17	47	10	8	20	17	55
35	10	12	19	16	57	11	12	20	18	61
Total	393	394	652	584	2003	405	411	662	616	2094
Mean	10.66	11.26	18.63	16.69	57.23	11.57	11.74	18.91	17.60	59.83
Standard Deviation	2.22	2.13	1.09	4.41	6.79	0.74	0.78	1.04	2.70	3.71

TABLE 16

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE LOWER
SOCIOECONOMIC STATUS MALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	12	12	17	15	56	12	12	18	17	59
2	8	12	17	18	55	12	12	20	17	61
3	0	10	16	1	27	11	12	16	17	56
4	12	12	18	19	61	12	12	20	20	64
5	11	12	17	15	55	11	12	19	20	62
6	12	12	18	19	61	11	12	20	17	60
7	12	12	18	11	53	12	12	19	17	60
8	11	11	18	15	55	11	12	20	18	61
9	11	11	19	20	61	12	12	20	20	64
10	10	12	19	16	57	12	12	19	19	62
11	11	11	20	13	55	12	12	19	15	58
12	10	12	17	15	54	12	12	17	17	58
13	12	12	19	18	61	12	12	19	18	61
14	12	12	18	16	58	10	12	18	15	55
15	7	11	17	13	48	12	12	19	15	58
16	10	12	17	16	55	12	12	19	19	62
17	10	11	16	13	50	12	12	18	17	59
18	12	11	18	9	50	12	12	19	18	61
19	12	12	20	18	62	12	12	20	18	62
20	11	12	18	12	53	12	12	19	15	58
21	12	12	17	16	57	12	12	17	15	56
22	9	7	17	15	48	10	12	19	17	58
23	11	12	19	15	57	9	12	20	17	58
24	12	12	19	20	63	12	12	20	19	63
25	10	12	19	15	56	12	12	20	16	60
26	8	11	19	16	54	11	12	19	14	56
27	12	12	19	17	60	12	12	20	20	64
28	11	12	17	13	53	12	12	18	19	61
29	12	11	19	19	61	12	12	17	19	60
30	12	12	20	17	61	12	12	20	19	63
31	11	9	16	8	44	12	10	17	10	49
32	12	7	15	16	50	12	8	16	17	53
33	8	7	16	10	41	10	9	18	12	49
34	10	11	17	14	52	12	12	18	16	58
35	9	12	19	15	55	10	12	19	18	59
Total	365	391	625	518	1899	404	411	656	597	2068
Mean	10.43	11.17	17.86	14.80	54.26	11.54	11.74	18.74	17.06	59.09
Standard Deviation	2.31	1.47	1.29	3.78	6.98	0.82	0.89	1.20	2.24	3.65

TABLE 17

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE UPPER
SOCIOECONOMIC STATUS FEMALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	11	12	19	19	61	12	12	20	19	63
2	8	8	15	16	47	12	12	18	14	56
3	12	12	17	19	60	11	12	19	20	62
4	12	12	17	17	58	12	12	18	20	62
5	9	12	19	18	58	12	12	20	18	62
6	12	12	19	20	63	12	12	20	18	62
7	8	11	19	19	57	12	11	19	15	57
8	10	11	19	15	55	10	12	18	15	55
9	12	12	20	19	63	12	12	20	20	64
10	12	12	20	18	62	12	12	19	19	62
11	9	12	17	18	56	10	12	19	16	57
12	10	12	20	18	60	12	12	20	18	62
13	10	12	19	12	53	12	12	19	16	59
14	11	11	18	15	55	12	12	16	17	57
15	12	12	18	15	57	11	12	18	19	60
16	10	12	20	18	60	12	12	20	19	63
17	12	12	19	14	57	12	12	20	17	61
18	10	12	20	15	57	10	12	20	15	57
19	10	12	19	18	59	12	12	19	16	59
20	12	12	19	19	62	12	12	18	18	60
21	12	12	19	19	62	10	12	19	19	60
22	9	12	18	18	57	12	12	19	19	62
23	12	12	19	20	63	10	12	19	17	58
24	12	12	19	20	63	12	12	20	20	64
25	9	9	18	18	54	12	11	18	10	51
26	12	12	16	19	59	10	12	19	16	57
27	9	12	18	18	57	12	12	17	18	59
28	12	12	18	19	61	12	12	20	19	63
29	10	12	18	16	56	12	11	18	17	58
30	12	11	17	17	57	10	12	17	16	55
31	10	12	20	18	60	12	12	20	19	63
32	10	12	17	15	54	12	12	18	17	59
33	12	12	20	20	64	12	12	20	20	64
34	10	11	16	13	50	11	12	18	15	56
35	11	12	19	18	60	12	12	20	19	63
Total	363	396	626	592	1977	391	405	642	591	2029
Mean	10.69	11.66	18.43	17.43	58.20	11.51	11.91	18.91	17.43	59.77
Standard Deviation	1.32	0.87	1.29	2.06	3.83	0.82	0.28	1.07	2.16	3.16

TABLE 18

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE MIDDLE
SOCIOECONOMIC STATUS FEMALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	10	12	19	20	61	12	12	19	20	63
2	11	11	20	14	56	12	12	19	17	60
3	12	12	18	19	61	10	12	19	19	60
4	10	12	19	18	59	12	12	20	18	62
5	11	12	20	18	61	12	12	20	19	63
6	12	12	20	15	59	10	12	19	20	61
7	6	12	16	15	49	12	12	18	14	56
8	8	12	20	16	56	12	12	18	16	58
9	12	12	18	20	62	12	12	20	20	64
10	10	10	18	14	52	10	12	19	15	56
11	12	12	20	18	62	12	12	18	15	57
12	10	12	20	19	61	12	12	20	15	59
13	10	12	20	19	61	12	12	20	19	63
14	12	12	19	20	63	12	12	18	19	61
15	12	12	18	14	56	10	12	17	13	52
16	2	12	19	12	45	12	12	18	15	57
17	12	12	19	18	61	12	12	19	19	62
18	12	12	19	18	61	12	12	18	17	59
19	12	12	18	20	62	12	12	18	19	61
20	8	12	20	16	56	10	12	20	20	62
21	11	12	19	19	61	10	12	20	20	62
22	10	12	18	15	55	12	12	19	14	57
23	10	12	18	18	58	10	12	18	19	59
24	10	12	18	14	54	10	11	15	17	53
25	9	12	20	13	54	12	12	20	18	62
26	12	12	18	20	62	12	12	20	18	62
27	12	12	18	17	59	12	12	18	19	61
28	12	12	19	17	60	10	12	19	18	59
29	12	12	19	19	62	12	12	20	19	63
30	11	12	17	20	60	11	12	17	18	58
31	12	12	18	17	59	12	12	19	18	61
32	10	12	17	12	51	11	12	18	16	57
33	12	12	18	20	62	12	12	20	20	64
34	8	10	17	11	46	9	11	18	12	50
35	5	5	17	9	36	10	11	19	12	52
Total	360	369	651	584	2003	395	417	657	607	2076
Mean	10.29	11.66	18.60	16.69	57.23	11.29	11.91	18.77	17.34	59.31
Standard Deviation	2.30	1.26	1.09	2.98	5.95	0.99	0.28	1.14	2.39	3.59

TABLE 19

PAPER-PENCIL AND OBJECT-FORM RAW SCORES FROM THE
LEE-CLARK READING READINESS TEST FOR THE LOWER
SOCIOECONOMIC STATUS FEMALES

Student Number	Paper-Pencil Results					Object-Form Results				
	Subtests				Total Score	Subtests				Total Score
	I	II	III	IV		I	II	III	IV	
1	10	12	18	18	58	12	12	19	19	62
2	12	12	17	19	60	12	12	18	17	59
3	12	12	19	17	60	12	12	20	19	63
4	12	11	18	18	59	10	12	19	19	60
5	9	12	17	13	51	12	12	18	17	59
6	12	12	18	19	61	10	12	17	18	57
7	10	11	16	12	49	12	11	18	19	60
8	12	12	18	15	57	12	11	20	15	58
9	12	10	19	16	57	12	10	20	15	57
10	12	12	18	20	62	12	12	18	18	60
11	0	12	20	18	50	11	12	19	15	57
12	10	12	19	19	60	10	12	18	20	60
13	10	11	19	14	54	12	12	19	18	61
14	11	11	19	13	54	12	12	17	15	56
15	10	11	16	18	55	12	12	18	18	60
16	10	9	18	16	53	12	12	18	16	58
17	10	12	16	18	56	12	12	17	19	60
18	10	12	16	9	47	10	12	18	13	53
19	10	12	17	18	57	12	12	18	16	58
20	8	12	18	14	52	11	12	18	13	54
21	11	12	19	15	57	10	12	17	18	57
22	12	12	18	17	59	12	12	19	20	63
23	10	12	18	16	56	12	12	18	16	58
24	6	12	16	2	36	12	12	18	15	57
25	11	12	18	18	59	12	12	16	19	59
26	6	12	17	16	51	12	12	15	13	52
27	10	12	18	17	57	10	12	16	17	55
28	7	12	19	15	53	10	12	18	16	56
29	12	12	18	19	61	12	12	19	18	61
30	5	12	18	13	48	12	12	19	20	63
31	10	12	16	9	47	11	12	18	17	58
32	11	12	15	17	55	12	12	17	19	60
33	10	12	17	17	56	12	12	18	18	60
34	10	12	19	19	60	12	12	20	19	63
35	12	12	18	17	59	12	12	19	19	62
Total	345	410	620	551	1926	403	416	634	603	2056
Mean	9.86	11.71	17.71	15.74	55.03	11.51	11.89	18.11	17.23	58.74
Standard Deviation	2.51	0.67	1.18	3.60	5.33	0.82	0.40	1.16	2.03	2.79