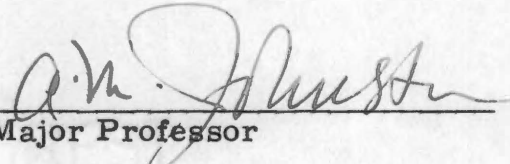


August 5, 1963

To the Graduate Council:

I am submitting herewith a thesis written by Louise Miller Harris entitled "Academic Achievement and Social Adjustment of Fourth Grade Pupils with and without Kindergarter Experiences." I recommend that it be accepted for nine quarter hours of credit in partial fulfillment of the requirements for the degree of Master of Science, with a major in Elementary Education.


Major Professor

We have read this thesis and
recommend its acceptance:





Accepted for the Council:


Dean of the Graduate School

ACADEMIC ACHIEVEMENT AND SOCIAL ADJUSTMENT OF
FOURTH GRADE PUPILS WITH AND WITHOUT
KINDERGARTEN EXPERIENCES

A Thesis
Presented to
the Graduate Council of
The University of Tennessee

In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Louise Miller Harris

August 1963

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Sincere thanks are due the principal and fourth grade teachers at Wesley Avenue School, Atlanta, Georgia.

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CHAPTER I

INTRODUCTION

It is generally agreed that the first years of a child's life constitute a very important period in his growth and development. The progress young children make when they enter school depends to an enormous extent upon the amount and quality of desirable background experiences. Such factors as the child's intelligence and general background of experience influence the learning and adjustment in the school years.

A child's adjustment in the first grade will be influenced strongly by what has gone on before. His adjustment in the first grade, in turn, will influence his adjustment in later grades.¹

The effects of kindergarten education appear to be in proportion to the quality of the program. The available evidence suggests that a quality kindergarten program favorably influences later academic achievements, safeguards health, fosters social adjustment, has desirable effects upon personality growth, and increases opportunities for

¹Arthur T. Jersild, Child Development and the Curriculum (New York: Prentice Hall, Inc., 1946), p. 99.

acquiring skills necessary for intelligent behavior.²

When the kindergarten meets the needs of each child and his group, it can make a tremendous contribution toward the wholesome growth and development that follows during the next years.³

I. STATEMENT OF THE PROBLEM

The problem of this study was to make a comparison of the academic achievement and social adjustment of the twenty-five pupils without kindergarten experience, who were matched as to intelligence quotient and chronological age, with twenty-five pupils who had had kindergarten experience in the fourth grade at the Wesley Avenue School, Atlanta, Georgia.

The purpose of the study, more specifically, was to answer the following specific questions:

1. Do children with kindergarten experiences make more rapid progress in academic achievement and social adjustment

²Elizabeth Machem Fuller, About the Kindergarten, National Educational Association, Department of Classroom Teachers (Washington, D. C.), p. 19.

³Beryl Campbell and others, "Growth and Development of Children of Kindergarten Age," California Journal of Education, 24:10, August 1955.

than children without such experiences where chronological age and intelligence quotient are held constant?

2. Is there a significant difference between the scores of the two groups as measured by the Stanford Achievement Test, Form J?
3. Is there a significant difference between the scores of the two groups as measured by the California Test of Personality?

II. THE IMPORTANCE OF THE STUDY

The development of children during the pre-elementary school years is a matter of importance not only to adults concerned with the rearing and education of children but also to persons concerned primarily with the education of children in the elementary and high school. Nearly all the goals sought in the education of older children must be achieved by way of education that builds upon the foundation of habits, skills, attitude, emotional tendencies and "personality" traits established before the child reaches the first grade.⁴

The kindergarten is an important beginning of a child's school experience.

⁴Jersild, op. cit., pp. 98-99.

Helen Hefferman said,

The modern world is far too complex to hope that the process of growing up will equip the child with the learnings he requires to make a successful adjustment to life. His quality as a person and his contribution to the social groups of which he is a part are determined by the experiences he has had and the opportunities they provide him for learning. The quality and quantity of education are important. Of great significance are the initial social, intellectual and emotional experiences of early childhood.⁵

Awareness of the advantage of school for the five year old is expressing itself in many ways--in public demand, in legislative support, and in the programs and platforms of national organizations.

Office of Education records show all but eight states reporting kindergarten in their public schools. The Census Bureau's latest tally for 1958-1959 found nearly one half of the nation's 3.8 million five year olds in kindergarten.

Parents grow more aware every day that young children can benefit from organized educational experiences--in their habits of health and safety in their social skills, in their feelings of self confidence and security. In fact, public opinion seems to be swinging sturdily behind the idea that the kindergarten should be available to every child

⁵Helen Hefferman, "Significance of Kindergarten Education," Childhood Education, 36:316, March 1960.

and that children do benefit measurably from their kindergarten experience.⁶

It is believed by the writer, through providing the pre-school child with a wealth of wholesome experiences such as those provided by the good kindergarten, that there will be a difference in later academic achievement and social adjustment of children with and without kindergarten experience.

A review of related literature is discussed in Chapter II.

III. LIMITATIONS OF THE STUDY

This study was limited to fifty fourth grade pupils at the Wesley Avenue School, Atlanta, Georgia. Twenty-five of the subjects had had kindergarten experience and twenty-five had not had such experience.

It must not be assumed that the findings from this study with such a limited number of pupils and with subjects from only one school and city can be applied to kindergarten and non-kindergarten pupils in the fourth grade, in general. However, it is probable that a number of such samplings would offer some insight into this problem. The factors studied in this research are by no means inclusive, but it should be of

⁶Hazel F. Gabbard, "A Nation's Concern for Kindergarten," School Life, 41:12-14, May 1959.

value to the person responsible for the education of pre-school children.

IV. HYPOTHESES

The hypotheses of this research were:

1. Children with kindergarten experience make more progress in academic achievement and social adjustment than children without such experience who were matched as to intelligence quotient and chronological age.
2. Children with kindergarten experience will score significantly higher on the Stanford Achievement Test, Elementary Battery, Form J than will children who were matched as to intelligence quotient and chronological age.
3. Children with kindergarten experience will score significantly higher on the California Test of Personality, Form AA, than will children who were matched as to intelligence quotient and chronological age.

V. PROCEDURE

This study presents an analysis of mental, social, and achievement data obtained from pupils in the fourth grade.

Permission to do this study, which involved the fourth grade

pupils at Wesley Avenue School, was given by the proper authority of the Atlanta Board of Education.

The method used in selecting fifty subjects involved several steps. There were 198 pupils enrolled in the fourth grade as of September 1962. Information from the permanent record folders revealed that ninety-three of this number had had kindergarten experience, sixty-one had not had such experience, and forty-two were transfer pupils from another school whose records did not show if they had or had not attended kindergarten.

The classroom teachers administered the Kuhlmann-Anderson Test D to the entire fourth grade population of Wesley Avenue School in September. The writer compared the intelligence quotients of those pupils who had attended kindergarten and those who had not attended kindergarten. On the basis of quotients made on the test, only twenty-five subjects--ten boys and fifteen girls--with kindergarten experience and twenty-five subjects--nine boys and sixteen girls--without such experience were matched, holding intelligence quotient and chronological age constant. It was not possible to match more than this number. Tables I and II in Chapter III show a comparison

⁷F. Kuhlmann and Rose G. Anderson, Kuhlmann-Anderson Test D (Princeton: Personnel Press, Inc., 1952).

of intelligence quotients and chronological ages for the kindergarten and non-kindergarten pupils. The intelligence quotients for the kindergarten group ranged from eighty-three to one hundred five. Chronological age ranged from eight years and ten months to nine years and nine months. The intelligence quotients for the non-kindergarten group were from eighty-three to one hundred four. Chronological age ranged from eight years and one month to nine years and eleven months.

Although the writer did not use an instrument to compare the home background of the subjects involved, a study of the permanent record folders revealed that approximately 40 per cent of the kindergarten group were from broken homes and approximately 43 per cent of the non-kindergarten group were also from broken homes. The occupations for male parents were laborers and for female parents domestic work.

The Stanford Achievement Test, Elementary Battery, Form J⁸ was also administered and scored by the classroom teachers in September 1962 to the entire population of the fourth grade, but only

⁸Truman Kelly and others, Stanford Achievement Test, Elementary Battery, Form J (Atlanta: Harcourt, Brace and World, Inc., 1958).

scores of the fifty subjects selected by the writer were used to measure their achievement.

The abovementioned tests were re-scored by the writer.

The California Test of Personality, Form AA,⁹ was administered and scored by the writer in November to measure traits of social adjustment.

VI. DEFINITION OF TERMS

In order for it to be clearly understood what this study specifically deals with, certain terms need to be defined. The meanings of these terms as they are used in this study are as follows:

Academic Achievement referred to the school accomplishments as determined by the Stanford Achievement Test, Elementary Battery, Form J.

Social Adjustment referred to the traits as measured by the California Test of Personality.

VII. DESCRIPTION OF INSTRUMENTS

The following instruments were used:

⁹Louis P. Thorpe, Willis Clark and Ernest Tiegs, California Test of Personality, Form AA (Monterey: California Test Bureau, 1953).

Kuhlmann-Anderson Test. The test provides a measure of mental age as well as I.Q. It is in part unique in the use of median mental age scores on separate tests to arrive at the mental age of the pupil, thus obtaining I.Q. The availability of a greater number of separate booklets for varying levels of competence makes the test better adapted for different groups of pupils. The claim for validity rests on data showing that the intercorrelations among the sub-tests and the total test are neither high nor low.

Reviewer, David Segel, said, "The test is among the best as all-round group intelligence traits that gives an over-all mental age."¹⁰

Stanford Achievement Test. This battery is a series of comprehensive achievement tests designed to measure the important knowledges, skills, and understandings commonly accepted as desirable outcomes of the major branches of the elementary curriculum. The tests are intended to provide dependable measures of these outcomes, comparable from subject to subject and grade to grade, for use in connection with improvement of instruction, pupil guidance, and evaluation of progress.

¹⁰Oscar Buros, The Fifth Mental Measurements Yearbook (New York: The Gryphon Press, 1959), p. 25.

The test is so constructed as to be sharply analytical among subjects. The Elementary Battery for Grades Three and Four includes six tests; namely, (1) Paragraph Meaning, (2) Word Meaning, (3) Spelling, (4) Language, (5) Arithmetic Reasoning, and (6) Arithmetic Computation. These six separate tests, each of satisfactory reliability, are available to analyze group or class differences among subjects, and also differences in the abilities of an individual pupil.

Scores on the Stanford Achievement Test are interpreted chiefly by reference to two sets of norms: (a) the Model-age grade norms, and (b) the Total-group grade norms. The actual computation of the norms was based on the results of the random samples of pupils from 363 systems.¹¹

"All in all, the Stanford Achievement Test is a useful plodding dependable workhorse that serves the middle of the school system well."¹²

California Test of Personality. This test was designed to identify and reveal the status of certainly highly important factors in personal and social adjustment usually designated as intangibles.

¹¹Kelly and others, op. cit., pp. 1-16.

¹²Buros, loc. cit.

The purpose of the test is to provide the data for aiding individuals to maintain or develop a normal balance between personal and social adjustment.

The California Test of Personality is organized around the concept of life adjustment as a balance between personal and social adjustment. The items in the personal adjustment half of the test are designed to measure evidence of six components of personal security; namely, (1) Self-Reliance, (2) Sense of Personal Worth, (3) Sense of Personal Freedom, (4) Feeling of Belonging, (5) Withdrawing Tendencies, and (6) Nervous Symptoms. The items in the social adjustment half of the test are designed to measure evidence of six components of social security. These components are: (1) Social Standards, (2) Social Skills, (3) Anti-Social Tendencies, (4) Family Relations, (5) School Relations, and (6) Occupational Relations and Community Relations.

This test is based upon the study of over one thousand criteria or specific adjustment patterns or modes of responses to specific situations.¹³

The Educational Research Bulletin of the New York City

¹³Thorpe, Clark, and Tiegs, op. cit., pp. 3-9.

Schools carries this statement regarding this test: "This procedure which is followed in the California Test of Personality is perhaps the most diagnostic of any test of this type."¹⁴

VIII. ORGANIZATION OF THE STUDY

This study is divided into four chapters.

In Chapter I, the writer gives the statement of the problem, importance of the study, limitations of the study, hypotheses, procedure, definition of terms, description of subjects, and organization of the study.

A review of related literature and a need for research are discussed in Chapter II.

Chapter III gives the presentation and interpretation of data.

The summary, findings, conclusions, and recommendations are found in Chapter IV.

¹⁴Ibid., p. 7.

CHAPTER II

A REVIEW OF RELATED LITERATURE

The influence of kindergarten training on the later development of children has been a research problem from the beginning of the century.

Research in this area as reported in Encyclopedia of Educational Research¹ list a number of studies with dates ranging from 1912 to 1935. This was a period during which the kindergarten movement was growing rapidly.

Actually, it was not until the research of the 1920's that there was any factual proof of the importance of kindergarten education in relation to later school adjustment and progress. The findings of the research of this period seemed to indicate that children with kindergarten experience tend to make relatively more rapid progress in the first five grades than children who have not attended kindergarten.²

A study by Risser and Elder in Indiana was made to determine how one year of kindergarten training affects subsequent success in

¹Walter S. Monroe (ed.), Encyclopedia of Educational Research (New York: The Macmillan Company, 1950), Katherine L. McLaughlin, "Kindergarten Education," pp. 647-54.

²Neith E. Headly, "Kindergarten Comes of Age," N. E. A. Journal, 43:153, March 1954.

the grades in the elementary school.³

Of the 323 children enrolled in grades one to five of the Monticello and Union Township Public Schools, 130 had received kindergarten training and 193 had not. Based on marks in reading, writing, and arithmetic, Risser and Elder concluded that:

1. The benefits of one year of kindergarten training are noticeable throughout the first five grades of school. The better foundation acquired in these grades as a result of kindergarten training seems to warrant the assumption that the same benefits will continue throughout the school life of the pupil.
2. Success in reading in the elementary school is more closely related to kindergarten training than is success in penmanship and arithmetic.
3. Kindergarten increases the chances for success in subjects requiring as a basis the ability to read well.

Katherine Von Levern, with 1061 children as subjects, studied the value of kindergarten education as incidental to an investigation of

³Faye Risser and Harry Elder, "The Relation Between Kindergarten Training and Success in Elementary School," Elementary School Journal, 28:286-89, December 1927.

retardation in the elementary school of Benton, Michigan.⁴ The non-kindergarten group had a smaller percentage of failures than the kindergarten group. Von Levern concluded that kindergarten training does not prepare for success in the first grade.

In 1928 at St. Louis University, Commins and Shank made a comparison between the progress of 823 kindergarten and 833 non-kindergarten children through the grades of elementary school in Kansas City, Missouri.⁵ The differences were not reliable and the conclusion was a negative one. They concluded that kindergarten children were neither superior in intelligence or accomplishment. They did not conclude that kindergarten training was useless.

Mary G. Waite, 1926, made a study to determine the effect of kindergarten training in lessening the percentage of repeaters.⁶ Waite found that in nineteen towns in the state of Michigan without kindergartens, the percentage of repeaters in all grades was 28.7 per cent greater than in seventy-five towns with kindergartens.

⁴Katherine Von Levern, "The Study of Failures in Elementary School," Educational Method, 7:166-70, January 1928.

⁵W. D. Commins and Theodore Shank, "A Kindergarten Study," St. Louis University Bulletin, No. 15, 1936.

⁶Mary G. Waite, "The Kindergarten in Certain City School Surveys," United States Office of Education, Bulletin No. 13 (Washington, D. C., 1949).

A study by Peters to measure the results of kindergarten education in terms of elementary school progress of 437 children from fourteen Berkley and Oakland, California, schools revealed that non-kindergarten children skipped and failed a greater number of times than did the kindergarten group.⁷ He thought that a kindergarten group will proceed faster than a group of the same age and intelligence not having kindergarten training. Therefore, the kindergarten expedites school life.

Myers reports a study done in Missouri in 1936.⁸ With the assistance of Misses Abernathy and Miller, Myers tabulated the grades in content subjects and in certain social attitudes including work and study habits and the ability to get along with other children. The results indicated that the kindergarteners did better than the non-kindergarteners both as to progress in subject matter and the ability to adjust themselves to school conditions.

Brueckner investigated relations of kindergarten attendance to non-promotion in grades one-two and one-six.⁹ Selecting twenty-eight

⁷W. J. Peters, "The Progress of Kindergarten Pupils in Elementary Grades," Journal of Educational Research, 7:117-26, February 1923.

⁸Vest C. Myers, "Is It Worthwhile to Send Your Child to Kindergarten?" Educational Method, 15:388-89, April 1936.

⁹National Education Association Research Division, Research Memo, op. cit., p. 5.

school areas, ten of which had kindergartens, he found the median per cent of the non-promotions throughout all six grades to be greater for school areas without kindergartens.

A master's thesis study made at Atlanta University in 1936 by Davenport gives a statistical treatment of scores of two groups of elementary pupils divided on the basis of kindergarten attendance at Oglethorpe School.¹⁰ Davenport pointed out that the differences between the means of the total scores was in favor of the kindergarten group in all subjects except arithmetic computation; this difference was slight, but was in favor of the non-kindergarten group. Social adjustment ranked high for both groups. Since the evidence gathered from the study showed that most of the advantages in school achievements favored the kindergarten group, the conclusion reached seemed to be that kindergarten training had some favorable effect on later school achievement.

Morrison reported a study of the progress data of 13,730

¹⁰Cleopatra Davenport, "A Comparative Statistical Treatment of Scores of Elementary Pupils Divided on the Basis of Kindergarten Attendance" (unpublished Master's thesis, Atlanta University, Atlanta, 1936), p. 63.

children showing non-promotion beyond grade one.¹¹ His investigations showed that retardation was much greater for those children who had not attended kindergarten.

A doctor's dissertation by Gordon at Harvard in 1940 reviewed and evaluated all the significant studies that have been made on the value of kindergarten education.¹² The effect of such education on the habits of behavior and on school achievement in two cities in Massachusetts was studied. Gordon's study indicated that:

1. Children who had attended kindergarten possess more desirable habits of behavior than similar children who had not attended kindergarten as they enter first grade, and for a part of the year, but at the end of the year there is no difference in the behavior habits of the two groups of children.

¹¹John Cayce Morrison, "Influence of Kindergarten on the Age-Grade Progress of Children Entering School Under Six Years of Age," cited by Shirley H. Cowin, "Reading Readiness Through Kindergarten Experience," Elementary School Journal, 52:96, October 1951.

¹²Mary G. Gordon, "An Experimental Investigation of the Values of Kindergarten," cited by E. Jean Lyle, "Construction of a Questionnaire to Determine the Feelings of Teachers Concerning the Value of Kindergarten Experiences of Children" (unpublished Master's thesis, University of Tennessee, Knoxville, 1955), p. 6.

2. Kindergarten education gives children no advancement in regard to subsequent school achievement.

Allen, in a study made in Pennsylvania in 1949, asked teachers to grade each child on seventeen qualities.¹³ His comparison was based on the teachers' estimates of certain traits of character. Conclusions of the study were:

1. The ability to mix; originality and response to ideas were in favor of the kindergarten group.
2. The difference is high in favor of kindergarten in self confidence, love of nature, friendliness, observation, oral expression, and in ability to play.
3. The non-kindergarten surpasses in only four points: (a) moral attitude, (b) attention, (c) manual ability, and (d) orderliness.

Pratt's findings of 206 children in the schools of Erie County, Pennsylvania, showed that pupils having previous experience in kindergarten were far superior to the non-kindergarten group.¹⁴

¹³L. Marsh Allen, "Kindergarten Versus Non-Kindergarten Children with Respect to Certain Traits of Character," Elementary School Journal, 15:534-50, June 1941.

¹⁴Willis E. Pratt, "A Study of the Differences in the Prediction of Reading Success in Kindergarten and Non-Kindergarten Children," Journal of Educational Research, 42:525-53, March 1949.

In a more recent study, Fast was afforded the opportunity to compare the progress of kindergarten and non-kindergarten children of approximately the same age in 1954-55.¹⁵ The progress of 134 children who had received kindergarten training and forty-six children who had not was studied. Results clearly indicated that children with kindergarten experience were superior to those who had not, thus confirming much of the earlier research into this problem.

A similar inquiry was made in Appleton, Wisconsin, in 1956 to determine whether or not two years of kindergarten training, which was provided for four and five year olds, prepared children for their elementary education better than only one year of kindergarten attendance.¹⁶

The results indicated that 92 per cent of the children on the primary level having had two years of kindergarten were above the national norm in reading ability as compared with 80 per cent of those having only one year in kindergarten. On the intermediate level, the percentages were 79 per cent and 62.5 per cent, respectively. On

¹⁵Irene Fast, "Kindergarten Training and Grade 1 Reading," Journal of Educational Psychology, 48:52-57, January 1957.

¹⁶Charlotte Klemm and Viola Pelzer, "Case for the Kindergarten," Wisconsin Journal of Education, 89:8-10, May 1957.

the personality tests, both the primary and intermediate two-year kindergarten pupils received higher scores than did those with only one year of kindergarten.

Nicholson indicated from the data gathered that the over-all picture is one of no significant difference between the pre-school and non pre-school pupils in social adjustment in the two grades studied.¹⁷ The pupils responded to a two-criterion sociometric test involving choices for preferred playmates and for desired associates in classroom group work. Each teacher listed the names of those pupils whom she considered to be in the upper fourth of her class in "over-all good adjustment to the classroom social situation," and those she considered to be in the lowest fourth of her group on the same criterion.

Bonney and Nicholson reported the findings of Georgia Phillips master's thesis at Eastern New Mexico University, who found no advantage among first graders on the California Test of Personality for pupils who had had kindergarten experience over those not having had such experience.¹⁸

¹⁷Merl Bonney and Ertie Lou Nicholson, "Comparative Social Adjustments of Elementary School Pupils with and without Pre-school Training," Child Development, 29:125-33, March 1958.

¹⁸Ibid., p. 130.

Witty and Kopel believe that the kindergarten is a place where children learn basic attitudes and acquire varied and vital experiences which lead children to be cooperative, explanatory, self-directed, and relatively independent.¹⁹

Foster and Headly feel that kindergarten stresses the child's responsibility for himself. Besides encouraging his self-reliance in more personal matters, the school offers opportunities for the child to learn to take his place in a group.²⁰

Some educators agree that kindergarten experiences favorably influence later achievements and social adjustment, and some do not.

Results of approximately 75 per cent of the studies mentioned above suggested that children with kindergarten experiences are generally more advanced throughout the elementary school. Approximately 25 per cent of the studies do not agree.

A NEED FOR RESEARCH

Although conclusions reached from previous studies tend to show that kindergarten children make more progress through elementary

¹⁹Paul L. Witty and Daniel Kopel, Reading and the Educative Process (Boston: Ginn and Company, 1939), p. 182.

²⁰Josephine C. Foster and Neith E. Headly, Education in the Kindergarten (Atlanta: American Book Company, 1959), p. 20.

grades and have a smaller percentage of failure and retardation than non-kindergarten children, a great deal of experimentation and research still remains to be done. Investigation into the emotional and social adjustment of children as a result of kindergarten experiences is an area where much research is needed.

More research is needed to determine the contributions made by the good, modern kindergarten toward the growth of children. It could serve to encourage other school systems to extend their programs to provide opportunities for pre-first-grade experiences for the children in their communities.

CHAPTER III

PRESENTATION AND INTERPRETATION OF DATA

I. INTRODUCTION

This chapter presents and interprets data concerning twenty-five children with kindergarten experience and twenty-five children without such experience. This study was concerned with the comparison of the academic achievement and social adjustment of the two groups.

The subjects were administered the Kuhlmann-Anderson Test D, Stanford Achievement Test, Elementary Battery, Form A, and the California Test of Personality.

In accordance with the basic design of the study, intelligence quotient and chronological age were the variables by which the two groups were matched.

Accompanying tables summarize and illustrate the findings.

The writer made use of the mean, standard deviation, standard error of means, standard error of their difference and the "t" test for testing the significance of the differences of means.

The formulas used to compute the statistical data were:

The mean¹

$$\bar{X} = M' + \frac{\sum fX'}{N} (i)$$

The Standard Deviation²

$$S = \sqrt{\frac{\sum X^2}{N-1}}$$

The Standard Error of the mean³

$$S\bar{X} = \frac{S}{\sqrt{N}}$$

The Standard Error of difference⁴

$$SD_{\bar{X}} = \sqrt{S\bar{X}^2 + S\bar{X}^2}$$

The "t" test⁵

$$t = \frac{\bar{X}_1 - \bar{X}_2}{SD_{\bar{X}}}$$

¹M. M. Downie and R. W. Heath, Basic Statistical Methods (New York: Harper and Brothers, 1959), p. 30.

²Ibid., p. 47.

³Ibid., p. 117.

⁴Ibid., p. 124.

⁵Ibid., p. 134.

II. INTELLIGENCE QUOTIENTS AND COMPARATIVE DATA

Table I presents a comparison of intelligence quotients of pupils who had had kindergarten experience and those who had not had such experience in the fourth grade.

According to Table I the mean of the intelligence quotients for the kindergarten group was 93.06; the standard deviation was 7.76; and the standard error of the mean was 1.55. The mean of the intelligence quotients for the non-kindergarten group was 92.88; the standard deviation was 7.39; and the standard error of the mean was 1.48.

When the data were used as a basis for comparing the two groups, the difference between the mean of the intelligence quotients was .08. The standard error of the difference was 2.14 with a "t" of 0.04. This value was checked at the .05 per cent level of confidence and was below 2.064 required for significance at 24 degrees of freedom. It was concluded that there was no significant difference in the intelligence quotients of the two groups.

TABLE I

COMPARISON OF INTELLIGENCE QUOTIENTS MADE BY
 TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE
 NON-KINDERGARTEN PUPILS AS MEASURED BY
 THE KUHLMANN-ANDERSON TEST D

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	93.06	7.76	1.55	2.14	0.04
Non-Kindergarten	92.98	7.39	1.48		

III. CHRONOLOGICAL AGE COMPARATIVE DATA

Table II presents a comparison of chronological ages for the two groups. The table shows that 110.46 months was the mean chronological age for the kindergarten groups; the standard deviation was 18.24; and standard error of the mean was 3.65. The mean chronological age for the non-kindergarten group was 109.74 months; the standard deviation was 26.25; and standard error of the mean was 5.27.

When these data were compared, the difference between the mean score of the two groups was .72 months. The standard error of the difference was 6.04 with a "t" of 0.12. From data in Tables I and II, it was concluded that there were no significant differences in the intelligence quotients and chronological ages of the two groups.

IV. ACHIEVEMENT TEST RESULTS AND COMPARATIVE DATA

Tables III through IX present a comparison of achievement test scores for each of the six tests included in the Stanford Achievement Test, Elementary Battery, Form J.

TABLE II

COMPARISON OF CHRONOLOGICAL AGES OF TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS IN FOURTH GRADE

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	110.46 months	18.28	3.65	6.04	0.12
Non-Kindergarten	109.74 months	26.35	5.27		

Comparison of Word Meaning Test Scores of the Two Groups

Table III shows the mean score on the word meaning test for the kindergarten group was 30.64; the standard deviation was 6.21; and standard error of the mean 1.24. The mean score on word meaning test for the non-kindergarten group was 23.20; the standard deviation was 6.82; and standard error of the mean was 1.36. The difference between the mean scores was 7.44. The standard error of the difference was 1.84 with a "t" of 4.0. This value was checked at the .05 per cent level of confidence and was above 2.064 which was required for significance at 24 degrees of freedom. These findings reveal that there is a significant difference between the two groups in word meaning as measured by the Stanford Achievement Test, Form J.

Comparison of Paragraph Meaning Test Scores of the Two Groups

According to Table IV, the mean score on the paragraph meaning test for the kindergarten group was 26.12; the standard deviation was 6.78; and standard error of the mean 1.36. The mean score on paragraph meaning test for the non-kindergarten group was 22.52; the standard deviation was 6.29; and standard error of the mean was 1.26. The difference between the mean scores of the groups was 4.20. The standard error of the difference was 1.85 with a "t" of 2.27. This value was checked at the .05 per cent level of confidence and was found

TABLE III

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS ON WORD MEANING AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	30.64	6.21	1.24	1.84	4.0
Non-Kindergarten	23.20	6.82	1.35		

TABLE IV

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS ON PARAGRAPH MEANING AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	26.72	6.78	1.36	1.85	2.27
Non-Kindergarten	22.52	6.29	1.26		

to be above 2.064 which was required for significance at 24 degrees of freedom. It was concluded that there is a significant difference between the two groups in paragraph meaning as measured by the Stanford Achievement Test, Form J.

Comparison of the Spelling Test Scores of the Two Groups

Table V shows that the mean score on the spelling test for the kindergarten group was 31.20; the standard deviation was 11.71; and standard error of the mean was 2.34. The mean score on the spelling test for the non-kindergarten group was 25.60; the standard deviation was 9.90; and standard error of mean was 2.34. The mean score on the spelling test for the non-kindergarten group was 25.60; the standard deviation was 9.90; and standard error of mean was 1.98. The difference between the mean scores of the two groups was 5.60. The standard error of the difference was 3.07 with a "t" of 1.50. When checked for significance at .05 per cent level of confidence, it was found to be below 2.064 required for significance. There was no significant difference between the scores of the two groups in spelling.

Comparison of the Language Test Scores of the Two Groups

According to Table VI, 30.60 was the mean score on the language test for the kindergarten group; the standard deviation was

TABLE V

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS ON SPELLING AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	31.20	11.71	2.34	3.07	1.50
Non-Kindergarten	25.60	9.90	1.98		

TABLE VI

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS IN LANGUAGE AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	30.60	11.75	2.35	3.68	.82
Non-Kindergarten	27.60	14.14	2.83		

11.75; and standard error of mean was 2.35. The mean score on the language test was 27.60 for the non-kindergarten group; the standard deviation was 14.14; and standard error of the mean was 2.83. The difference between the mean scores on the language test was 3. The standard error of difference was 3.68. This value was checked at the .05 per cent level of confidence and there was found to be no significant difference between the language test scores of the two groups.

Comparison of Arithmetic Reasoning Test Scores of the Two Groups

Table VII shows that the mean score on the arithmetic reasoning test for the kindergarten group was 26.08; the standard deviation was 9.16; and standard error of mean was 1.83. The mean score on the arithmetic reasoning test for the non-kindergarten group was 23.44; the standard deviation was 6.96; and a standard error of the mean was 1.39. The difference between the mean scores on the arithmetic reasoning test was 2.64. The standard error of the difference was 2.30 with a "t" of 1.15. This value was checked at the .05 per cent level of confidence and was below 2.064 which was required for significance at 24 degrees of freedom. It seems safe to say that there was no significant difference between the two groups.

TABLE VII

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN PUPILS IN ARITHMETIC REASONING AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	26.08	9.16	1.83	2.30	1.15
Non-Kindergarten	23.44	6.96	1.39		

Comparison of Arithmetic Computation Test Scores of the Two Groups

Table VIII shows that the mean score on the arithmetic computation test for the kindergarten group was 31.00; the standard deviation was 10.05; and a standard error of the mean was 2.01. The mean score on the arithmetic computation test for the non-kindergarten group was 26.32; the standard deviation was 6.00; and the standard error of the mean was 1.20. The difference between the mean scores of the arithmetic computation test was 4.68. The standard error of the difference was 2.34 with a "t" of 2.00. When this value was checked at the .05 per cent level of confidence, it was slightly below 2.064 required for significance with 24 degrees of freedom. However, it was significant at the 20 per cent level of confidence.

Comparison of Battery Median Test Scores of the Two Groups

Table IX presents a summary of the achievement test results for the battery median.

The table shows that the mean score of the total scores for the battery median for the kindergarten group was 175.60; the standard deviation was 31.84; and the standard error of the mean was 6.36. The mean score of total scores for the battery median for the non-kindergarten group was 159.60; the standard deviation was 26.78; and a standard error of the mean was 1.92.

TABLE VIII

COMPARISON OF GRADE SCORES MADE BY TWENTY-FIVE KINDERGARTEN PUPILS AND TWENTY-FIVE NON-KINDERGARTEN PUPILS IN ARITHMETIC COMPUTATION AS MEASURED BY THE STANFORD ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff	"t"
Kindergarten	31.00	10.05	2.01	2.34	2.00
Non-Kindergarten	26.32	6.00	1.20		

TABLE IX

COMPARISON OF TOTAL ACHIEVEMENT GRADE SCORES MADE
BY TWENTY-FIVE KINDERGARTEN AND TWENTY-FIVE
NON-KINDERGARTEN PUPILS ON THE STANFORD
ACHIEVEMENT TEST, FORM J

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	175.60	31.84	6.36	8.33	1.92
Non-Kindergarten	159.60	26.78	5.36		

When these data were used as a basis for comparing the two groups, the difference between the mean scores of the total scores for the battery median was 16.00. The standard error of the difference between the means was 8.33 with a "t" of 1.92. This value was checked at the .05 per cent level of confidence and was slightly below 2.064 which was required for significance at 24 degrees of freedom. However, it was significant at the 20 per cent level of confidence.

As a result of data in Tables III and IV, it was concluded that children who had had kindergarten experience made significantly more progress in word meaning and paragraph meaning than children who had not had such experience.

As a result of data in Tables V, VI, VII, and VIII, it was concluded that there was no significant difference in the scores of the two groups in spelling, language, arithmetic reasoning, and arithmetic computation. Although there was a significant difference in word meaning and paragraph meaning in favor of the kindergarten group, data in Table IX revealed that there was no significant difference in the total achievement scores of the two groups.

Since the evidence gathered from the findings did not show that most of the advantages in achievement were in favor of either group, the conclusion reached seemed to be that children who had had

kindergarten experience do not make significantly more achievement test progress than children without such experience.

V. CALIFORNIA TEST OF PERSONALITY TEST RESULTS AND COMPARATIVE DATA

Tables X, XI, and XII present a summary of the personal adjustment, social adjustment and the total adjustment of kindergarten and non-kindergarten subjects in the fourth grade.

Comparison of Total Scores Made by the Two Groups on the Personal Adjustment Factor

According to Table X, the mean score for the personal adjustment factor of the California Test of Personality for the kindergarten group was 47.56; standard deviation was 6.90; and standard error of the mean was 1.38. The mean score for the personal adjustment factor for the non-kindergarten group was 43.68; standard deviation was 7.35; and standard error of the mean was 1.47. The difference between the mean scores of the personal adjustment factor of the California Test of Personality was 3.88. The standard error of the difference was 2.0 with a "t" of 1.94. This value was checked at the .05 per cent level of confidence and was slightly below 2.064 which was required for significance at 24 degrees of freedom. However, it was significant at the 20 per cent level of confidence.

TABLE X

COMPARISON OF TOTAL RAW SCORES MADE BY TWENTY-FIVE
KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN
PUPILS ON THE PERSONAL ADJUSTMENT FACTOR OF
THE CALIFORNIA TEST OF PERSONALITY

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	47.56	6.90	1.38	2.0	1.94
Non-Kindergarten	43.68	7.35	1.47		

These findings reveal that there is no significant difference between the two groups in personal adjustment.

Comparison of Total Scores Made by the Two Groups on the Social Adjustment Factor

Table XI shows the mean score for the social adjustment factor of the California Test of Personality for the kindergarten group was 55.20; the standard deviation was 8.22; and the standard error of mean was 1.64. The mean score of the social adjustment factor for the non-kindergarten group was 51.72; the standard deviation was 6.94; and the standard error of the mean was 1.37. The difference between the mean score of the two groups on the social adjustment factor test scores was 3.48. The standard error of the difference was 2.1 with a "t" of 1.66. When checked for significance, it was found to be below 2.064 required for significance.

It can be concluded that there is no significant difference between the two groups in social adjustment as measured by the California Test of Personality.

Comparison of Total Scores Made by the Two Groups on the Total Adjustment of the California Test of Personality

According to Table XII, the mean score for the total adjustment factor in the California Test of Personality for the kindergarten group was 101.80; the standard deviation was 14.39; and the standard

TABLE XI

COMPARISON OF TOTAL RAW SCORES MADE BY TWENTY-FIVE
KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN
PUPILS ON THE SOCIAL ADJUSTMENT FACTOR OF
THE CALIFORNIA TEST OF PERSONALITY

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	55.20	8.22	1.64	2.1	1.66
Non-Kindergarten	51.72	6.94	1.39		

TABLE XII

COMPARISON OF TOTAL RAW SCORES MADE BY TWENTY-FIVE
KINDERGARTEN AND TWENTY-FIVE NON-KINDERGARTEN
PUPILS ON THE TOTAL ADJUSTMENT FACTOR OF
THE CALIFORNIA TEST OF PERSONALITY

Group	Mean	S. D.	S. E. Mean	S. E. Diff.	"t"
Kindergarten	101.80	14.39	2.88	3.95	1.47
Non-Kindergarten	96.00	13.53	2.71		

error of the mean was 2.88. The mean score of the total adjustment test scores for the non-kindergarten group was 96.00; the standard deviation was 13.53; and the standard error of the mean was 2.71. The difference between the mean scores of the groups was 5.80; the standard error of the difference between the mean was 3.95 with a "t" of 1.47. This value was checked at the .05 per cent level of confidence and was below 2.064 which was required for significance at 24 degrees of freedom.

It can be concluded that there is no significant difference in total adjustment between the two groups as measured by the California Test of Personality.

As a result of data in Tables X, XI, and XII, it was concluded that children who had had kindergarten experience do not make significantly more progress in social adjustment than children without such experience.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

I. SUMMARY

This study attempted to compare the academic achievement and social adjustment of twenty-five pupils with kindergarten experience and twenty-five pupils without such experience in the fourth grade at the Wesley Avenue School, Atlanta, Georgia. It was made during the school year of 1962-63.

The purpose of the study was to answer the following specific questions:

1. Do children with kindergarten experiences make more progress in academic achievement and social adjustment than children without such experiences where chronological age and I. Q. are held constant?
2. Is there significant difference between the scores of the two groups as measured by the Stanford Achievement Test, Elementary Battery, Form J?
3. Is there significant difference between the scores of the two groups as measured by the California Test of Personality, Form AA?

The hypotheses of the study postulated that:

1. Children with kindergarten experience make more progress than children without such experience.
2. There is a significant difference between the scores of the two groups as measured by the Stanford Achievement Test, Elementary Battery, Form J.
3. There is a significant difference between the scores of the two groups as measured by the California Test of Personality, Form AA.

This study was limited to fifty fourth grade pupils of which twenty-five had had kindergarten experience and twenty-five had not had kindergarten experience. They were administered the following tests:

1. Kuhlmann-Anderson Test D¹
2. Stanford Achievement Test, Elementary Battery, Form J²
3. California Test of Personality, Form AA³

¹Oscar Buros, The Fifth Mental Measurements Yearbook (New York: The Gryphon Press, 1959), p. 8.

²Truman Kelly and others, Manual, Stanford Achievement Test (Elementary Battery, Form J, 1953), p. 9.

³Louis P. Thorpe, Willie Clark, and Ernest Tiegs, California Test of Personality, Form AA (Monterey: California Test Bureau, 1953), p. 10.

The variables upon which the two groups were matched were chronological age and intelligence quotient.

Special terms used in this study were:

1. "Academic Achievement" referred to the school accomplishment as determined by the Stanford Achievement Test, Elementary Battery, Form J.
2. "Social Adjustment" referred to the traits as measured by the California Test of Personality, Form AA.

The tests used in this study have been appraised by reviewers as the most diagnostic and give the best over-all view of any tests of that type.

The data derived from the administration of the tests were tabulated and treated statistically, evaluated and interpreted with results reported in Chapter III.

Prior studies made by Risser and Elder,⁴ Waite,⁵ Peters,⁶

⁴Faye Risser and Harry Elder, "The Relation Between Kindergarten Training and Success in Elementary School," Elementary School Journal, 28:286-89, December 1927, p. 13.

⁵Mary G. Waite, "The Kindergarten in Certain City School Surveys," United States Office of Education, Bulletin No. 13 (Washington, D. C., 1949), p. 14.

⁶W. J. Peters, "The Progress of Kindergarten Pupils in Elementary Grades," Journal of Educational Research, 7:117-26, February 1923, p. 15.

Myers,⁷ Brueckner,⁸ Davenport,⁹ Morrison,¹⁰ Pratt,¹¹ Fast,¹² and Klemm and Pelzer,¹³ concluded that children do benefit measurably from their kindergarten experience.

⁷Vest C. Myers, "Is It Worthwhile to Send Your Child to Kindergarten?" Educational Method, 15:388-89, April 1936, p. 16.

⁸National Education Association Research Division, Research Memo, p. 16.

⁹Cleopatra Davenport, "A Comparative Statistical Treatment of Scores of Elementary Pupils Divided on the Basis of Kindergarten Attendance" (unpublished Master's thesis, Atlanta University, Atlanta, 1936), p. 16.

¹⁰John Cayce Morrison, "Influence of Kindergarten on the Age-Grade Progress of Children Entering School under Six Years of Age," cited by Shirley Cowin, "Reading Readiness through Kindergarten Experience," Elementary School Journal, 52:96, October 1951.

¹¹Willis E. Pratt, "A Study of the Differences in the Prediction of Reading Success in Kindergarten and Non-Kindergarten Children," Journal of Educational Research, 42:525-53, March 1949, p. 18.

¹²Irene Fast, "Kindergarten Training and Grade 1 Reading," Journal of Educational Psychology, 48:52-57, January 1957, p. 19.

¹³Charlotte Klemm and Viola Pelzer, "Case for the Kindergarten," Wisconsin Journal of Education, 89:8-10, May 1957, p. 19.

Von Levern,¹⁴ Commins and Shank,¹⁵ and Gordon¹⁶ found from their studies that children having had kindergarten experiences do not exceed those who have not had such experiences.

Marsh's¹⁷ study indicated that the kindergarten groups were favored over non-kindergarten groups in social adjustment.

On the contrary, Nicholson¹⁸ and Peters¹⁹ found no significant difference between the pupils who had had kindergarten experience and those who had not had such experience in social adjustment.

¹⁴Katherine Von Levern, "The Study of Failures in Elementary School," Educational Method, 7:166-70, January 1928, p. 14.

¹⁵W. D. Commins and Theodore Shank, "A Kindergarten Study," St. Louis University Bulletin, No. 15, 1936, p. 14.

¹⁶Mary G. Gordon, "An Experimental Investigation of the Values of Kindergarten," cited by E. Jean Lyle, "Construction of a Questionnaire to Determine the Feelings of Teachers Concerning the Value of Kindergarten Experience of Children" (unpublished Master's thesis, University of Tennessee, Knoxville, 1955), p. 6.

¹⁷L. Marsh Allen, "Kindergarten Versus Non-Kindergarten Children with Respect to Certain Traits of Character," Elementary School Journal, 15:534-50, June 1941, p. 18.

¹⁸Merl Bonney and Ertie Lou Nicholson, "Comparative Social Adjustments of Elementary School Pupils with and without Pre-School Training," Child Development, 29:125-33, March 1958, p. 20.

¹⁹Ibid., p. 28.

II. SUMMARY OF FINDINGS

In academic achievement, the two groups were somewhat similar in distribution. The test scores of each of the six tests included in the Stanford Achievement Test, Form J, were compared in Chapter III.

According to Tables III and IV, pages 32 and 33, respectively, the data revealed that the critical ratio of 4 in word meaning and 2.27 in paragraph meaning was above the "t" of 2.064 required for significance when checked at the .05 level of confidence with 24 degrees of freedom. Therefore, it was concluded that there is a significant difference between the scores of the two groups.

In Tables V, VI, VII, VIII, and IX, the data revealed that the critical ratio of each test was below the "t" of 2.064 required for significance at the .05 level of confidence with 24 degrees of freedom. While it was concluded that there was no significant difference between the scores of the two groups in spelling, language, arithmetic reasoning, arithmetic computation, and total battery median as measured by the Stanford Achievement Test, Form J, it should be noted that the kindergarten group was superior to the non-kindergarten group on all achievement tests, and some of the differences of means were very close to statistical significance.

In personal, social, and total adjustment factors in the California Test of Personality, the two groups were similar in distribution. In

Tables X, XI, and XII, when the two groups were compared and results checked at the .05 level of confidence, the ratio of 1.94 in personal adjustment factors, the ratio of 1.66 in social adjustment factors, and the ratio of 1.47 in total adjustment was below 2.064 required for significance. Again, it should be noted that the kindergarten group was superior to the non-kindergarten group, although not statistically significantly so.

It was concluded that children who had had kindergarten experience did not make significantly more progress in social adjustment than children without such experience.

III. CONCLUSIONS

The following conclusions were drawn from interpretation of the data collected in the study. The conclusions are specific answers to the questions posed in the purpose of the study.

1. Statistical findings in Chapter III showed the children in this study with kindergarten experience made consistently better mean scores, which in two instances were statistically significant and in other instances approached significance in academic progress, personal or social adjustment than did children without such experience where chronological age and intelligence quotient were held constant.
2. There were two sub-tests on which there were significant differences between the achievement scores of the two

groups as measured by the Stanford Achievement Test, and on the other four sub-tests differences approached significance in varying degrees. All differences were in favor of the kindergarten group.

3. There is no significant difference between the scores of the two groups on the personal and social factors, as measured by the California Test of Personality although means were consistently higher for the kindergarten group.

IV. RECOMMENDATIONS

The analysis and interpretations of the findings of this study justify the following recommendations:

1. That more studies be made in the area of pre-school training;
2. That persons engaged in the training of children have special training in this specific field;
3. That the person or persons responsible for the physical plant of the kindergarten provide more ample space and facilities for the kindergarten program;
4. That the curriculum of the kindergarten be centered around building desirable habits, skills, and attitudes rather than blocks of subject matter to be learned or a place to teach the usual first grade program; and
5. That additional time be allotted by the school authority for a pre-school clinic, whereby the personnel may visit the home and have close contact with the pre-school child before the transaction from home to school is made.

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