

**THE RELATIONSHIP OF SCHOOL ENTRANCE
AGE TO ACHIEVEMENT**

BY

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THE RELATIONSHIP OF
SCHOOL ENTRANCE AGE TO ACHIEVEMENT

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by
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To the Graduate Council:

I am submitting here with a Research Paper written by Mary Kathleen McKissick entitled "The Relationship of School Entrance Age to Achievement." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts, with a major in Psychology.

Elizabeth H. Stokes
Major Professor

Accepted for the
Graduate Council:

William H. Ellis
Dean of the Graduate School

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CHAPTER I

INTRODUCTION

There have been many different measures used for determining a child's readiness to enter school. However, chronological age remains the chief criterion for school entrance. At present, the entrance age varies in different states from a child's being permitted to enter first grade if he will be 6 by September 1st to the succeeding January 31st (Ilg and Ames, 1965).

As these date lines become more rigid and fixed, educators and parents exert more demands for exceptions to the rules. Such demands are the outcome of a concern for more adequately meeting the individual needs and differences of children.

It has been widely accepted that children should be offered learning experiences as they become ready for the particular experience. Wilson and Hall (1972) found that mental age in conjunction with physical, perceptual, cognitive, linguistic, and psychological development, as well as experiences, are more important than chronological age in determining school readiness, especially in readiness for reading.

There is general agreement among educators that a child should enter first grade only when he is sufficiently mature or "ready" in four areas of development: social, emotional, physical, and intellectual. The criterion that is most widely used for establishing school readiness, however, is chronological age. Chronological age is not necessarily synonymous with any of the four developmental areas.

The early formative years are vital in the development of the below average, average, and intellectually superior child. Each individual should be challenged by a school program which recognizes that children do differ in their abilities and needs. Heilman (1967) points out that the first year or two in school can make or mar the learning experiences of a child throughout his or her school life and can exert profound effect upon adult life. Some children have found early school experiences filled with success, achievement and approval. Others have found failure, frustration and despair in attempting tasks which they are not prepared to accomplish.

In a study by Ilg and Ames (1965), it was generalized that boys in the early years develop more slowly than girls, and that about a six month lag should be considered for boys in the age zone of 5 to 7 years. This is

especially important when deciding a child's readiness for school.

Rowland (1959) points out that at the turn of the century, John Dewey and G.T. Patrick challenged the idea of a fixed age as the criterion for admission to first grade. Evidence accumulated since that time has not resolved this controversial issue.

The Educational Policies Commission (1966) believes the practice of accepting six as the normal school entrance age is obsolete. All children, the report stated, should have the opportunity to go to school at public expense beginning at the age of four.

Nimnicht, Sparks, and Mortensen (1963) found a significant relationship between intelligence quotient and academic success in the first grade. Bright children did better regardless of chronological age. There was also a significant relationship between the father's occupation and child's school success and between the child's sex and school success, with girls achieving at a higher level. Results appeared to show that chronological age was the least reliable variable in predicting success in the first grade.

Halliwell (1966) reviewed the research of thirty-two studies on entrance age and school success. A

brief summary of the studies which Halliwell considered important are included in this paper. In 1929, Knight and Manuel analyzed the records of the graduates of Waco High School, Waco, Texas. Their subjects were divided into two groups: pupils who had entered first grade at age seven and pupils who had entered first grade at age six. When they compared the two groups, they found that the pupils who had entered school at age six attained higher grades and fewer failures than did the pupils who had entered school at age seven. Although no intelligence scores for the two groups were available, they did compare the socio-economic status, and found no difference between the two groups. Hamalainen, in a 1952 study, conducted in Nassau County, New York, also found that the over-age pupils did not do as well as the normal-age pupils, however, he did not define overage. In studies by Green and Simmins, it was found that an extra year of schooling, which early entrance permitted, resulted in such pupils being one year ahead in grade, and approximately three months ahead in achievement of pupils of the same age and intelligence who had not entered school early.

Halliwell (1966) acknowledged that on the basis of studies by Carter, King, and Forester, among unselected children entering kindergarten and first grade, the younger

ones generally do not achieve or adjust as well as those who are older. Carter stated that the chronologically older child appeared to have the advantage in academic achievement over younger children when given the same school experiences, but felt factors other than intelligence and age have operated in the case of some normal-age children to retard normal academic achievement.

Isaacs (1963) reported that many schools have for years recognized that some children were ready for reading instruction, before the regular entrance age, and have permitted early enrollment. Gallagher and Rogge (1966) have pointed out that follow-up studies of early entrants usually found them doing better than the average child in their grade.

Wilburn (1973) studying first grade entrance age as a factor in sixth grade achievement across readiness levels, found that a relationship did exist between chronological entrance ages and sixth grade achievement but that the results were in favor of the younger entrants. That is, those children who entered first grade on the younger end tended to achieve higher in the sixth grade. It was also concluded that a positive relationship existed between readiness for first grade entrance and sixth grade achievement. A statistically significant correlation was shown

between entrance age into the first grade and readiness for first grade work.

In a four year longitudinal study of academic achievement in terms of age of entry into first grade, Fleniken (1974) administered the SRA Achievement Series to 495 students each year under study. The scores in the selected areas of achievement were catergorized according to: (1) the quarter of the calendar year in which the student was born (January, February, March were the first quarter) and (2) sex of the subjects. It was concluded that chronological age influenced achievement in grades one through four. Even though the quarter effect was not statistically significant in grades three and four, an examination of the over-quarter mean achievement scores for all variables indicated that the mean achievement scores for the first two quarters of the year were higher than those found in the third and fourth quarter. Sex, as a factor in achievement, showed increasing influence as the years of the study progressed, with the females doing better in arithmetic and reading.

Lewis (1972) studied the effect of a three month school entrance age differential on general achievement among elementary school pupils. The investigation further attempted to determine whether or not differences in

achievement remained uniform between September and December enrollees from one grade level to the next throughout the six grade levels of elementary school. Other factors also considered were the effect of sex and intelligence upon general achievement among pupils being studied. The California Achievement Tests and the California Short Form Test of Mental Maturity were used to measure achievement and rate of intellectual growth of 88 students. It was concluded that significant differences in overall academic achievement during the elementary school years were not likely to accrue as a result of a three month chronological age differential at the time of entrance into first grade. When considering candidates for early admission to first grade, the key to successful early admissions program appears to be selectivity, which takes into account such factors as the physical, intellectual, emotional and social traits of the candidates.

Damuth (1976) studied the relationship between entrance age and achievement in mathematics and reading, of children whose ages within a specific grade differed by six months. The Stanford Achievement Test was the instrument used to measure achievement. The sample consisted 195 third grade children from a representative group of Dade County, Florida, public schools. Subjects

were included if they had 1967 birthdates in May/June (average age) or November/December (underage). Based on first and second grade achievement scores, neither age nor sex were significant factors in performance of reading or mathematics.

Evans (1975) studied the differences in adjustment and achievement of inner-city children classified by age of entry into kindergarten and by sex. Adjustment was quantified by use of the Peterson and Quay Behavior Problem Checklist, and achievement was measured via the Metropolitan Achievement Test. Children were selected for the study if (1) the child began kindergarten in the school system in which the study was conducted and was presently in the fourth year of school (2) his date of birth fell into one of three two-month bands qualifying him as an earlier entry, average entry, or later entry child and (3) he was from a home where English was the language primarily spoken. The finding on adjustment variables revealed that earlier entry age children (children who were comparatively young when they started school) generally scored highest on the Behavior Problem Checklist; average entry age children generally scored second highest; and children in the later entry age group generally scored the lowest. On achievement variables,

the total population exhibited no significant differences among entry age groups or between sexes. However, interactions between sex and entry age were significant with later entry females scoring higher on achievement than most groups.

Kantner (1973) studied age as one of four independent variables in predicting the achievement of first graders. The California Test of Mental Maturity was administered immediately prior to the beginning of the first grade year to determine mental age. During the first month of school, the subjects were given the Stanford Early School Achievement Test to determine readiness levels for first grade work. Near the end of one year of instruction in the first grade, the pupils were given the Stanford Achievement Test to determine their achievement in reading, language skills, arithmetic, and total achievement. Mental age was found to be the best single predictor of reading achievement, and in the achievement of language skills the readiness score was found to be the strongest predictor.

In 1957, Ilg and Ames surveyed 100 consecutive clinical cases seen at the Gesell Institute because of trouble in school. All children were, by their standards, overplaced in school. Thirteen years later in 1970,

Ilg, Ames, Haines, and Gallispe (1978) conducted a similar survey of 100 clinical cases and concluded that 67% of the children were overplaced in school. Although the number of children who were overplaced was reduced from the earlier survey, Ilg and Ames still continue to be of the opinion that one of the most easily spotted, most easily remedied, and most serious reasons for school problems is overplacement.

As can be determined by the literature reviewed, there is contradictory evidence on the effect of school entrance age on school achievement. However, this is still the major criterion used for school entrance. It is important that continued critical examinations of the practice of admitting children to school on a strictly chronological age criterion be made. Readiness for reading instruction would seem to be particularly important and teaching the child to read remains one of the main goals of the primary grades. It is generally accepted that before reading the child needs a combination of background experiences, knowledge, skills, and maturation in order to decode and to comprehend printed symbols (Wilson and Hall, 1972).

Purpose of the Study

The purpose of this study is to explore the effect

of school entrance age on the Reading Achievement Test scores of a specific group of second and third grade children. The children being studied are those who had been placed in reading readiness classes in the first grade public school setting.

Hypothesis

The following hypotheses are to be tested:

1. There is no significant relationship in the standardized Reading achievement scores and ages of children in the second and third grade included in the study.
2. There is no significant relationship in the standardized Reading achievement scores of males and females who were in the second and third grades included in the study.

Definition of Terms

1. Readiness classes: All the students in this study had been placed in reading readiness classes in the first grade, due to the poor score (below 25) obtained on the Metropolitan Readiness Test. The low score showed that the students would have a difficult time learning to read under normal instruction conditions.

Limitation of the Study

1. The study was confined to students in the second and third grade of Holiday Park Elementary School, Hopkinsville, Kentucky.
2. The study was confined to students who had been in reading readiness classes in the first grade.
3. No attempt was made to determine what students, if any, had attended kindergarten prior to their admission to first grade.
4. No attempt was made to include the socio-economic level, or any other factor except sex of students, which might affect readiness.

CHAPTER II

METHOD

Subjects

The subjects were selected from students in the Christian County School System, Hopkinsville, Kentucky. The students attended Holiday Park Elementary School, where the Investigator was employed as a substitute teacher. This school houses kindergarten through 4th grade students. There are approximately 650 students ranging in age from 5 years to 9½ years old.

All the students included in the study were students who had been placed in reading readiness classes rather than the regular first grade reading classes when they entered school at the first grade level. The criteria used for placement in the readiness class were scores on the Metropolitan Readiness Tests which fell below 25 on a 100 point scale. The Metropolitan Readiness Tests were administered within the first month of each school year, and the students were placed in the regular first grade reading classes or the reading readiness class on the basis of the score earned. All students who earned below the cut-off score designated, spent their first year of school in the reading readiness class. All students

who spent their first year in the reading readiness class rather than in the regular first grade reading classes, and who were second- or third-grade students in April, 1978, were included in the study. There were 31 third-grade and 28 second-grade students who met these criteria. Omitted from this study were nine students who had repeated one or more grades as determined by their being one or more grades behind the correct grade for their present age.

Instrument

The instrument used to measure reading readiness of the subjects was the Metropolitan Readiness Tests (Hildreth, Griffiths and McGauvran, 1965). The Metropolitan Readiness Test contains six subtests used to provide a tentative classification of pupils' degree of maturity or skills important for mastering first grade work. According to the scores earned on the test, readiness is classified as superior, high normal, average, low normal, or low. It is pertinent to this study to examine the section entitled Scoring and Significance, in the Manual for Teachers, which describes what is expected of the readiness status of the "low" group.

Score Range	Letter Rating	Readiness Status	Significance
Below 24	E	Low	Chances of difficulty high under normal instruc- tional conditions. Further readiness work, assignment to slow sections or individualized work is essential.

All children, at Holiday Park, who score below 25 on the Metropolitan Readiness Test are placed in reading readiness classes. These classes have teachers who are especially qualified to help students with reading difficulties. The student has reading and language art in the readiness class, but attends mathematics, art, music, and gym with the other first year students. The students are promoted from this class when the teacher feels they are ready to leave, usually at the end of the school year. They are then placed in one of the regular second grade reading classes, usually in the low normal group.

The instrument used to measure the achievement of the subjects in Reading was the Comprehensive Test of Basic Skills (CTBS), Level 1, Form S. The test was administered to all second and third grade students in April, 1978. The Comprehensive Test of Basic Skills is designed to measure the achievement of students in six basic areas:

Reading, Language, Arithmetic, Reference Skills, Science, and Social Studies. The test was administered by the regular teacher as a part of the regular evaluation program.

The Total Reading score was the score examined. The Reading section is divided into two parts: Reading Vocabulary and Reading Comprehension. The scores on the two parts are combined to achieve the Total Reading score. The reading section takes one hour and five minutes to complete with one break between the two parts. The test was administered according to standardized procedures and was scored by hand by the classroom teachers at the completion of the entire battery.

Precedure

The teachers reported the raw score, grade equivalent, and stanine for each student. The raw score for each student participating in the study was changed by the Investigator to Expanded Scale Score using Table 5 of the Examiner's Manual (1973). The Expanded Scale Scores are produced from a single, equal interval scale of scores across all grades for use with all level of the Comprehensive Tests of Basic Skills. This score is expressed in three-digit numbers, ranging from 000 to 999. Comparisons may be made between groups tested and the

standardization sample by using the Expanded Scale Scores. The Scale Score is recommended for research purposes.

CHAPTER III

RESULTS

The Pearson product-moment technique was employed to determine the correlation coefficients. The scores on the Reading Section of the Comprehensive Test of Basic Skills were correlated with the entrance age and sex of the second and third grade students, who had attended reading readiness classes in the first grade.

Utilizing the total third grade sample of 19 males and 12 females, correlation coefficients were computed between subjects' ages and CTBS Reading Score, and between subjects' sex and CTBS Reading Score. The coefficient obtained between the subjects' age and CTBS Reading Score and between subjects' sex and CTBS Reading scores were not significant. Table 1 contains the means, standard deviation, and coefficients.

Table 1

The Means, Standard Deviations and Correlations
between Sex and Reading Score of
Comprehensive Test of Basic Skills,
and Age and Reading Score of
Comprehensive Test of Basic Skills
for the Third Grade Subjects

Item	M	SD	1	2	3
1. Sex	1.387	.487	_____	-.165	.008
2. Age	105.613	2.959	_____	_____	-.050
3. CTBS	334.645	49.867	_____	_____	_____

Utilizing the total second grade sample of 17 males and 11 females, correlation coefficients were computed between subjects' ages and CTBS Reading Score, and between subjects' sex and CTBS Reading Score. The coefficient obtained between the subjects' age and CTBS Reading Score was not significant. The resulting coefficient computed between sex and age $-.446$, was significant beyond the .05 level at one degree of freedom. This showed a significant tendency for the boys to be older than the girls. Table 2 contains the means, standard deviation, and coefficients.

Table 2

The Means, Standard Deviations and Correlations
between Sex and Reading Score of
Comprehensive Test of Basic Skills,
and Age and Reading Score of
Comprehensive Test of Basic Skills
for the Second Grade Subjects

Item	M	SD	1	2	3
1. Sex	1.393	.488	_____	-.446*	-.233
2. Age	92.964	2.556	_____	_____	.119
3. CTBS	260.179	33.640	_____	_____	_____

*Significant beyond the .05 level

A Regression analysis was done to determine the effect of sex on the CTBS Reading score. F for both groups were < 1 so sex did not significantly influence the achievement of students within the sample.

There was a significant difference between the age of males and females in the second grade $F(1, 26) = 6.457$ $p < .05$, with males tending to be older than females.

CHAPTER IV

SUMMARY AND CONCLUSIONS

The primary purpose of this study was to explore the effect of school entrance age on the Reading Achievement Test scores of a specific group of second and third grade students. The subjects were students who had been placed in reading readiness classes in the first grade public school setting, rather than in the first grade program, because of low scores on the Metropolitan Readiness Test. Fifty-nine second and third grade students from Holiday Park Elementary School in Hopkinsville, Kentucky, made up the sample for the study. All students were given the Comprehensive Test of Basic Skills as a part of their regular educational program at the end of their second and third grade year. The scores on the Total Reading Section were correlated with the age and sex of the sample.

The data showed that the correlation coefficient obtained between the student's age and CTBS Reading Score was not significant for the second or third grade students. Thus, the ages of the subjects were not significantly related to the scores they earned on the reading achievement test.

The correlation coefficient obtained between the students' age and CTBS Reading Scores was not significant for either the second or third grade students. There was a significant correlation between the sex of the subjects and their ages in the second grade. The boys in this second grade sample were found to be significantly older than the girls. According to the literature, boys' achievement is usually lower than the achievement of girls (Ilg, Ames, Haines, and Gillespie, 1978). Since the boys in the present sample were older than the girls their achievement may have been higher than it would have been if they had been the same age. Thus any difference in achievement test scores that may have existed, could have been eliminated by the fact the boys were older than the girls.

The data obtained from this study did not support the majority of the previous studies, particularly the contentions of Ilg and Ames who are, perhaps, the best known persons in the battle for eliminating chronological age as the criterion for entrance into school. The data from this study did not show the older subjects achieving any better than the younger subjects, as measured by standardized achievement test scores in the second and third grades.

The small size of the group studied may have been a factor in the lack of significance between age and CTBS score. A larger group may have shown significance.

Limiting the group to readiness students may have affected the outcome. All children in the sample had scored in the Low range on the Metropolitan Readiness Test when they were placed in the readiness class. Thus, the sample was a homogenous group when they were selected for the class, and all were considered in need of special help.

The results of this study were supported by the previous research of Lewis (1972) and Damuth (1976) who also found that age was not a significant factor in the performance of reading. The majority of the studies did not support the findings of this study.

The Investigator also has some question about the scores earned on the CTBS by the sample subjects. Of the 31 third grade subjects, 11 or 35% scored in the 5th stanine and 10 or 32% scored in the 4th stanine. These two stanines are considered the average range on the grade level norms. Only 7 or 23% were in the 3rd stanine and 3 or 10% were in the 1st stanine. These scores appear unusual for children who were considered poor risks when they entered school three years earlier.

All children in the sample had earned scores of 25 or less on the Metropolitan Readiness Test when they entered first grade. A score of 25 on the readiness test is at the 7th percentile and in stanine 2, as compared to the norm group on whom this test was standardized. A score of 21 places the children at the 5th percentile and in stanine 1. Therefore, all of these children were in the 1st or 2nd stanine on the readiness test when they entered first grade.

Of the 28 second grade subjects, 1 or 4% scored in the 5th stanine, 9 or 32% scored in the 4th stanine, 9 or 32% scored in the 3rd stanine, 2 or 7% in the 2nd stanine and 7 or 25% in the 1st stanine. The contrast between the two groups is noticeable and cause the Investigator to have some concern about the accuracy of the scores. If the tests were inaccurately scored or the scores inaccurately computed from the norm tables, the results of this study would not be valid. It is possible that the children in the sample, as a result of their first year readiness experience, would be achieving at a much higher level than would be expected at the second and third grade level. Certainly, it would be desirable and expected that the special help offered in the readiness program would bring about improvement

in the achievement of the children in the sample. It is the opinion of the Investigator that achievement scores as high as the ones earned on the CTBS would be quite unusual, however, for children who scored as low on standardized readiness tests as these children scored when they entered school. It would also be unusual to have the change in percentages from the 2nd and 3rd grades, as shown in this sample. The failure to find a relationship between school entrance age and reading achievement could result from some problem in administering, scoring, or computing of the scores. Again, it should be emphasized that the dramatic change in achievement shown by these two groups scores may actually have occurred as a result of this special program in which these children were enrolled.

Recommendations for Further Research

Additional research could be expanded to consider mental age as well as chronological age as predictors of reading achievement among low readiness children. Reading, language, and mathematic scores of the readiness children could be compared to better understand how they perform in all areas of achievement. It is further recommended that future research studies may utilize designs which will account for both age and sex

differences when considering school achievement among readiness students.

The Investigator found no other studies in the literature comparing school entrance age with reading achievement of children who had received a special readiness program when they entered first grade. Most of the reported studies have involved either heterogeneous groups or children of above average ability. Since these low readiness children continue to have academic problems, it certainly appears there would be need for continuing research to try to determine any factors that might improve their chances for success in the public schools.

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