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ABSTRACT

A study was conducted to determine whether or not a child who is older when entering school performs better on reading readiness and achievement tests than a younger child. Two samples of second grade students from a middle class community in Bloomfield, New Jersey, were established by examining the ages of all the children in the cohort. Sample A consisted of 16 students who entered kindergarten between the ages of 4 years 11 months and 5 years 4 months (younger students), and Sample B was made up of 18 students who were between the ages of 5 years 5 months and 6 years 1 month when entering kindergarten (older students). Scores from the Metropolitan Reading Readiness Tests and the Iowa Tests of Basic Skills were examined. Results indicated no significant difference between the samples in reading test scores as a result of chronological age. Two tables of data are included. Contains 24 references. (Author/RS)

THE EFFECT OF A CHILD'S AGE AT SCHOOL ENTRANCE ON READING READINESS AND ACHIEVEMENT TEST SCORES

BY

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Abstract

Does a child's chronological age at the time of Kindergarten entry have an effect on his performance on standardized tests at a later point? This study was conducted to determine whether or not a child who is "older" when entering school performs better on reading readiness and achievement tests than a "younger" child.

Two samples of second grade students were established by examing the ages of all the children in the cohort. Sample A consisted of students who entered Kindergarten between the ages of 4 years 11 months and 5 years 4 months (younger students), and sample B was made up of students who were between the ages of 5 years 5 months and 6 years 1 month when entering Kindergarten (older students). Scores from the Metropolitan Reading Readiness Tests and the Iowa Tests of Basic Skills were examined. In the analysis of the students' t-tests, the results showed that there was no significant difference between the samples in reading test scores as a result of chronological age.

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In most public schools, the sole criterion for admission is chronological age as of a specified school calendar date. There is no uniform standard for the age requirement: the birthdate criterion may vary from one school system to another. As a result, concern has been expressed about whether a child's chronological age at the time of Kindergarten entry has an effect on his performance on standardized tests at a later point. It is desirable to determine whether or not a child who is "older" when entering school performs better on reading readiness and achievement tests than a "younger" child.

For decades, educators and peychologists have studied the effects of a child's age at school entry on student achievement, debating its implications for school policy. Various studies have been done in which the results show a significant relationship between a child's school entrance age and his performance ability. Other studies, however, have found that the chronological age hae no real bearing on a child's ability to achieve in school.

Opinions reported by the Gesell Institute of Human Development (1980) have stated that a child does best in school if started and promoted on the basis of maturational age rather than chronological age. Green and Simmons (1962) reported that delaying

entrance of a younger pupil results in greater achievement per year of schooling. In an early study by Baer (1959), two groups of Kindergarten students were compared: the first group had birthdates that fell within the first two months of the calendar year of school entry (oldest), and the second group had birthdates that fell within the last two months of the calendar year (youngest). The older group scored higher on achievement tests and did better in most subjects than the younger group.

Contrasing results were found by DeMeis and Stearns (1992) when they conducted a study to determine if a child's chronological age is related to academic and social performance in school. The results indicated significance only for older students being referred more often for a gifted evaluation, and younger students being placed more often in pre-first grade. The results do not indicate that age is a major contribution to human failure.

An opinion stated by Lofthouse (1987) is that the younger child is at a definite disadvantage. He notes that the child who is six years old entering Kindergarten has had 50% more experiences than the child entering at four years of age. Lofthouse is a proponent of a national cutoff date; a date whereby

no child, regardless of ability or circumstances, could enter Kindergarten for that year.

Hammond (1986) believes that what is of importance is developmental, not chronological age. She believes that each child can be viewed in three different domains: Physical, Affective and Cognitive, and that age alone does not determine success or failure in school. Kinaid and Reinherz (1986) studied the effects of age at school entry on school performance by comparing six birthdate groups, each representing two months of the calendar year. The results indicated age group differences on cognitive ability at school entry, with the youngest group having the lowest scores and the oldest group having the highest scores. It would appear, therefore, that an age cutoff could be beneficial to the pupil and his achievement in school.

Hypothesis

To provide additional evidence on this topic, the following study was undertaken. It was hypothesized that there was no significant difference between the age at which a child enters Kindergarten and his performance on reading readiness tests at the end of the Kindergarten year or between age and scores on achievement tests administered during the following year.

Definitions

For the purpose of this study, a younger student is a student who entered Kindergarten between the ages of 4 years 11 months and 5 years 4 months. An older student is one who entered Kindergarten between the ages of 5 years 5 months and 6 years 1 month. The Metropolitan Test of Reading Readiness is a test which measures several basic skills which are of importance in beginning reading and mathematics. The Iowa Test of Basic Skills is a test which measures achievement in various skill areas, including vocabulary, reading and mathematics.

Assumptions

It is assumed that the teachers of similar grade levels teach similar material. It is also assumed that tests are administered in a similar fashion.

Limitations

There was some movement of children out of the school system in the time span upon which this study is based. There were also a number of children whose Kindergarten test scores were unavailable for a variety of reasons. Only students for whom both sets of scores were obtained were used for this study.

Delimitations

This study was limited to the students who entered Kindergarten at Demarest School in the Bloomfield School District in the 1991-1992 school year.

Procedures

To test the hypothesis, two samples of second grade students from a middle class community in Bloomfield, New Jersey were established by examining the ages of all the children in the cohort. Sample A was made up of students who started Kindergarten between the ages of 4 years 11 months and 5 years 4 months. For the purposes of this study, the term "younger students" was the term used to describe this group. Sample B was made up of the students who began Kindergarten between the ages of 5 years 5 months and 6 years 1 month. The term "older students" was used to describe this group.

Cumulative records of these samples were examined. The Metropolitan Readiness Test was administered in the spring of the cohorts' Kindergarten year, and measured several basic skills which are of importance in beginning reading. The Iowa Test of Basic Skills was given in the spring of the cohorts' first grade year. This achievement test

attempts to measure a child's present level of performance in the areas of reading and mathematics. The scores which were examined for this study were the scores from the reading portion of the test. A statistical analysis using t-tests was used to determine the significance of mean differences between the samples on the end of Kindergarten reading readiness tests and the end of first grade reading achievement tests.

Results

To analyze the results of this study, the mean scores of the two samples were compiled from the percentile scores of two standardized tests in the areas of reading readiness and reading (see APPENDIX A). The means were then compared using students' t-tests. The purpose was to determine if there was any significant difference between the samples as a result of the age at which a child enters Kindergarten.

Table I and Table II illustrate the findings in respect to the younger sample and the older sample. Table I reflects scores on reading readiness tests, while Table II shows results based on first grade reading test scores.

Table I

Mean, Standard Deviation, and t-test of the Samples on Readiness Measures

	M	SD	t
younger students (4.11-5.4)	70.94	23.76	.66
older students (5.5-6.1)	65.22	26.51	

Table II

Mean, Standard Deviation, and t-test of the Samples on Reading Achievement

	M	SD	t
younger students (4.11-5.4)	78.31	24.9	.78
older students (5.5-6.1)	72.06	22.06	

As indicated by Table I, the means of the two samples were 70.94 and 65.22 respectively. Although thers was a 5.72 difference between the means, this difference was not significant as shcwn by the t of .66.

Table II indicates that the means of the two samples were 78.31 and 72.06 respectively. The difference of 6.25 between the means is also not significant as shown by the t of .78.

Conclusions and Implications

In the analysis of the students' t-tests, the findings indicate that there is no significant difference as a result of the variable of age between the two samples. It is, of course, interesting to note that the highest mean score on the first grade reading test was reached by the group of younger students (ages 4.11-5.4), but this may be a reflection of the difference in readiness of the cohorts of the study. The null hypothesis that there would be no significant difference between the age at which a child enters Kindergarten and his performance on reading readiness tests in Kindergarten and his achievement tests in first grade was accepted since no statistically significant difference was found.

Based on mean differences between the samples, it would appear that it would not be beneficial to give a "younger" child (4.11-5.4) an extra year before beginning Kindergarten. The results of this study indicate that the "older" child has no real advantage over the younger child when examining reading test scores. Most of the research, however, does agree that there are many other factors involved when determining whether or not a child is ready to begin Kindergarten. It would be beneficial to conduct more in-depth research to determine the

significance of these other factors on a child's ability to achieve in school.

School Entrance Age and Achievement: Related Research

At some time around a child's fifth birthday, parents and educators in our country generally expect that the process of formal education will begin. Barring complications, the child moves uniformly through the grades with classmates who are approximately the same age. Using chronological age as a criterion for entrance into the first grade means that the age difference between some pupils in the same class can be almost one year. Many parents and educators today are sympathetic to arguments presented by authorities such as Ilg and Ames (1965), who argued that many children would be more likely to succeed in school if they were older when they entered. The topic of delaying school entrance for children whose birthdates make them "young" for their class is a controversial one. Many researchers agree with Ilg and Ames (1965) while others have determined that entry age makes no difference in later academic success.

Cameron and Wilson (1989) reviewed school records for 313 students to determine the effects of age entry and gender on later academic achievement and grade retention. Twelve of these students were of legal age for school entry but were "redshirted", a term used to describe the process of holding a

student out of scholastic competition in the hopes of giving him a competitive advantage. The results of this research found statistically significant but relatively small achievement differences between oldest and youngest children when cognitive ability scores were controlled. Redshirts, however, did not appear to gain any advantage in achievement as a result of delayed school entry. Cameron and Wilson concluded that delay of school entry is not advisable and should not be encouraged by administrators or teachers as a means of ensuring better academic performance.

In contrast to the previous results, there are many studies which have documented the finding that the younger children at each grade level have a disproportionate number of problems, both academic and social (Bigelow, 1934; Campbell, 1980; Moule and Flewelling, 1980; Hale, 1963; Miller and Norris, 1967). Freberg (1987), conducted research in which chronological age and results of the Gesell School Readiness Test were evaluated as predictors of Kindergarten performance as measured by the Stanford Achievement Test. Subjects were 284 children attending Kindergarten in the San Luis Coastal School District in California during the 1986-87 school year. The results indicated that both older children

as well as developmentally-"ready" children performed better on the Stanford Achievement Tests than younger, developmentally "unready" children.

Crosser (1990) cited Bracey (1989) who reported a trend, particularly among affluent parents, to postpone enrolling their children in Kindergarten if those children would otherwise be amongst the youngest in the class. The following year, the children who were held back would be amongst the oldest entrants. According to Crosser, recent literature reflects specific interest in holding back one group of children in particular (Elkind, 1987; Karweit, 1988; Lofthouse, 1987; Uphoff and Gilmore, 1986). That group of children includes those born during the months of June, July, August, and September. This group, labeled "summer children", has been the subject of studies researching possible birthdate effects.

Crosser's research (1990) studies fifth and sixth grade children's academic achievement test scores, comparing summer birthdate children who entered Kindergarten at age five with summer birthdate children who entered at age 6. The results found that given similar levels of intelligence, males with summer birthdates tended to be advantaged academically by postponing Kindergarten entrance one

year. That advantage was greatest in the area of reading. Summer birthdate females who postponed Kindergarten entrance for one year were not significantly advantaged in reading or math, but were generally at an advantage, as indicated by composite battery scores on standardized tests.

In a similar type of study by Baer (1958), students' cumulative records were reviewed after they had completed 11 years of school. Two groups of students were studied: those representing the youngest two months of the entrance class and those representing the oldest two months of the entrance class. Baer found that the older group scored significantly higher on reading at Grades 3, 6, and 8, on mathematics at Grades 4, 6, and 8, and on social studies at Grade 5. According to Crosser (1990), if summer birthdate children were represented by the younger group in Baer's study, then his results would suggest that summer birthdate children might benefit in some respects by postponing Kindergarten entrance.

Other researchers investigated the relationships between academic achievement and school entrance age among pupils proceeding on to higher grades. Langer, Kalk, and Searls (1984) collected data from the National Assessment of Education Progress in order to

look at mathematics, science and reading performances of pupils in grades 4, 8, and 11. They found that achievement differences between the older and the younger classmates remained significant in fourth grade, decreasing by the eighth, and disappearing by the eleventh.

Teltsch and Breznitz (1989) conducted a follow-up study on the effect of school-entrance age on academic achievement and social-emotional functioning. The sample included 73 oldest pupils born in the months of January to March, and 64 youngest born in the months of October through December of the same calendar year. Results indicated that differences between the two groups in academic and social-emotional measures found when the subjects were in the first grade, persisted in part to the fourth grade. The youngest subjects continued to score lowest in mathematics and in oral silent reading comprehension.

In a study conducted by Jones and Mandeville (1990), the Basic Skills Assessment Program reading test scores for all South Carolina students in Grades 1, 2, 3, and 6 were analyzed in order to determine the degree of association of age at school entry with reading failure. Three separate groups were defined in each grade: 1) students whose birthdays occurred

in the official 12 month period for their grade. 2) students who were repeaters in their current grade or who were older than the official age range for their grade. 3) students who were younger than the usual 12 month age range for their grade level. In this study, three other variables in addition to age were examined: 1) race 2) sex 3) the lunch-payment status of each student was used as an indicator of socioeconomic status. Results showed that a larger proportion of younger students failed to meet the standards on the BSAP reading tests, but that the risk of failure associated with being male, black, and of a lower socioeconomic status was greater than that associated with being younger. Results suggest that age, therefore, plays a smaller role in students' reading success than do the other three factors examined.

Contrasting results were found by May and Welch (1986). In a longitudinal study of 152 children, they found differences in developmental age and readiness across the birth month groups in Kindergarten, but no relationship between birth month groups and sex as they affected achievement. May and Welch also found that differences in achievement were almost indetectable by Grade 3. Hall (1963), on the other hand, in a cross-sectional study of third and

sixth grade students, reported that older students achieved at a higher level than younger students, and that differences increased from Grade 3 to Grade 6. Also in contrast to the findings of May and Welch, Hall found that age was a more crucial factor in achievement for males than females. In Hall's sample, about 80% of the retained students had been in the younger half of their classes when entering school.

Similar results were found in a study by Walsh (1990). A total of 959 children who applied to enter Kindergarten in 1986 in six Virginia school districts were studied in an effort to determine the relation of social class, age, ethnicity, and gender to Kindergarten placement decisions (nonplacement, placement in a regular Kindergarten class, or placement in junior Kindergarten). Students were tested with the Brigance Kindergarten and First Grade Screen, or the Missouri Kindergarten Inventory of Developmental Skills. Findings indicated that poor, young males face a stronger likelihood of being placed in junior Kindergarten than their peers. The results of this study, as in that of Jones and Mandeville (1990) show that age alone is not an indicator of academic success in school.

Dietz and Wilson (1979) believe that parents and

teachers may be unduly cautious when delaying the entry of children to school on the basis of chronological age considerations. Their research studied 117 students who began Kindergarten in 1978-1979 to determine effects of beginning school age and gender on later school achievement and retention. The results indicated no significant differences on readiness scores among the age groups nor between girls and boys. There were no significant differences noted among age groups for 2nd grade ITBS reading, math, or composite scores, but boys scored six months lower than girls in reading and four months lower on the composite score. Results are consistent with those obtained by other investigations, and suggest that there is little or no effect on academic achievement that can be attributed to the birthdate of a student.

Uphoff and Gilmore (1985) believe that many well-meaning but illinformed parents and educators are pushing young children into our school systems too soon. When they enter school before they are developmentally ready to cope with it, their chances for failure increase dramatically. Their study of 278 pupils in the Hebron Nebraska Elementary School found that the group of summer children who were held back for one year before starting school achieved the

same or higher average cumulative percentile scores on the Iowa Test of Basic Skills than the summer children who were not given an extra year. Thus, the less bright but older and developmentally more mature pupils were able to do more with the ability they had than were the brighter, younger students.

In a similar study, Huff (1984) reported that a group of "at-risk" children identified in a 1980 Kindergarten readiness assessment in one elementary school in Ohio were followed as they progressed through the grades. Fifteen parents had delayed their child's start by one year; twenty-one had not. Using early 2nd grade test data from the Iowa Test of Basic Skills, Huff found that the delayed starters had a higher cumulative grade level score than the early starters.

A study by Boyd (1982) was conducted and had contrasting rssults. This study investigated the relationship of Kindergarten entrance age to academic achievement at the ends of grades one through five, and the influence of gender, race and family income on student achievement. A total of 185 students who attended a Kindergarten in 1979-1982 and remained in the Starkville, Mississippi public school system for six consecutive years served as subjects. Findings indicated no significant age differences between mean

achievement in reading and math at the end of first, second, third, fourth and fifth grades. Older entrants achieved higher mean scores in reading and math in grades one through three. Younger entrants caught up with or passed older entrants in reading and mathematics in grades four and five. When variables of gender, race, and family income were considered, the two age groups did not differ significantly in achievement.

Another study by Montz (1985) which supports previous research by Bigelow (1934), Campbell (1980), and Moule and Flewelling (1967), reviews the literature on the relationship between Kindergarten entrance age and academic achievement. The third grade level academic achievement of 20 early and 20 late entry Kindergarten children was investigated. A statistically significant difference in achievement was found, with the late entry students scoring significantly higher on the Iowa Test of Basic Skills than did those who entered Kindergarten early. In addition, findings revealed that 61 percent of the students who were retained in elementary or placed in modified primary classes were within the early entry group at the time of admission into Kindergarten.

A similar research report by Campbell (1985) discussed the results of a study which was conducted

to determine whether or not Kindergarten entry age is a factor in academic failure. The 457 seventh and eighth grade students who were subjects in the study had attended Fairfax County Virginia Public Schools since Kindergarten. Although the subjects were born during 1970, they were classified as younger and older on the basis of their birth month. Academic failure was measured by low readiness test scores, composite achievement scores below the 50th percentile, grade retention, remedial services, and failing marks. According to the findings, younger students earned more scores that fell into the low range of the Metropolitan Readiness Test and earned more composite achievement scores below the 50th percentile in grades 4 and 6. It was also found that the younger entrants were disproportionately retained, and were more likely to be receiving remedial instruction. In addition, younger entrants did not appear to overcome their inferior position as they progressed through the elementary grades.

Does a child's chronological age at the time of Kindergarten entry have an effect on his academic achievement in school at a later period? For many years, there has been controversy and concern regarding the appropriate age for school entrance. The current literature is ambiguous regarding

the optimal age of entrance and its effects on achievement. Some researchers suggest that students who are young at the time of Kindergarten entrance experience more difficulties, whereas others report no academic weaknesses as a result of age. Some studies suggest that gender, maturity, or socioeconomic status must be taken into consideration. Most researchers do agree, however, that school systems should expand the entrance requirements to consider the children's level of functioning as well as their chronological age.

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Appendix

APPENDIX A

Table III

Younger Students		Older Students	
Kdg. entry age	Reading Readiness percentile	Kdg. entry age	Reading Readiness percentile
4.11	93	5.5	97
4.11	97	5.5	18
4.11	54	5.5	87
5.0	83	5.6	60
5.0	77	5.6	90
5.1	48	5.6	80
5.1	60	5.7	57
5.1	80	5.8	99
5.2	97	5.8	40
5.3	60	5.8	35
5.3	2	5.8	29
5.3	90	5.9	54
5.4	77	5.9	31
5.4	63	5.9	66
5.4	80	5.9	95
5.4	74	5.9	93
		5.10	83
		6.1	60

Table IV

Younger Students		Older Students	
Kdg. entry age	Reading percentile	Kdg. entry age	Reading percentile
4.11	91	5.5	95
4.11	93	5.5	16
4.11	84	5.5	88
5.0	99	5.6	88
5.0	96	5.6	86
5.1	52	5.6	72
5.1	86	5.7	80
5.1	86	5.8	89
5.2	99	5.8	69
5.3	46	5.8	52
5.3	4	5.8	78
5.3	75	5.9	84
5.4	80	5.9	46
5.4	93	5.9	69
5.4	80	5.9	98
5.4	89	5.9	69
		5.10	84
		6.1	34