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ABSTRACT

A study determined if either school entry age or gender had any effect on the reading achievement of 121 second-grade students from the Metuchen, New Jersey, public school district. The subjects were administered the California Achievement Test in the Spring of 1994. Results indicated that late starters scored significantly better than early starters, whereas there were no gender differences in achievement. (Contains 62 references and two tables of data. An appendix containing study data is attached.) (Author/RS)

The Effects of School Entry Age and Gender on Reading Achievement Scores of Second Grade Students

by

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Abstract

This was a study of the reading achievements of 121 second grade students from the Metuchen, New Jersey, public school district. The students were administered the California Achievement Test in the spring of 1994. The purpose of this study was to determine if either school entry age or gender had any effect on the reading achievements of these second grade students.

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I would like to thank Dr. Albert J. Mazurkiewicz, Chairperson of the Department of Communication Sciences at Kean College, for his patience and guidance in helping me complete this paper.

I would also like to acknowledge the administrators of the Metuchen, New Jersey, public school district for their cooperation in supplying the information needed to undertake this study.

Dedication

This paper is dedicated to my family. My husband, George, has gone above and beyond the call of duty, not only as my sounding board for ideas, but also as my computer expert at all hours of the day and night. You truly are the wind beneath my wings.

I thank my two wonderful daughters, Alison and Kaitlin, who gave me peace and quiet during the critical points in the preparation of this paper.

A special thanks goes to my mother, Mrs. Lillian Davis, for all the many, free hours of babysitting and for putting so many miles on her car driving up and down the Parkway.

Finally, this paper is dedicated to my father, the late George W. Davis, Sr.. who I know would have been very proud of me.

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Does the chronological age at which a child enters school affect his reading ability by the time he reaches second grade? Do sex differences affect reading achievement?

Educators have tried for centuries to determine the optimum age for beginning formal education. In a survey of 23 communities in Middlesex County, New Jersey, concerning the cut off date by which children must be five years old in order to enter kindergarten, the results were as follows:

Number of Communities	Cut Off Date
8	October 31
6	December 31
5	October 1
2	October 15
1	November 1
1	December 1

Which of these cut off dates would allow for the maximum academic achievement for the students? Do boys fare as well as girls using these cut off dates, or should they be different for boys and girls?

Kindergarten children whose birthdays fall before June 30, 1986 are termed late starters. Those children whose birthdays fall between July 1 and December 31, 1986 are labeled as early starters. The Chronological Age is the age at which a child entered kindergarten in September 1991. Their Reading Achievement is the total reading score as listed on a test such as the California Achievement Test. It is assumed that the California Achievement Test Scores are valid and realistic and that the test was given under optimal conditions.

The question of a starting date for children entering kindergarten is frequently among the issues discussed both by educators and parents. Parents of young children about to

enter school often are anxious about their child's readiness to begin school and achieve success. This query is not new to the 1990's.

"One of the first questions is at what age children should be sent to school, for they neither should be delayed too long, so that time is lost, nor hastened too soon, at the risk of their health. The rule, therefore, must be given according to the strength of their bodies and the quickness of their wits jointly. What the age should be, I cannot say, for ripeness in children does not always come at the same time."

This quote was taken from the writings of a 16th century English schoolmaster and is referred to in the article "Too Much, Too Soon" published in the March 1985 edition of Principal.

Don Friesen, author of the article cited above, concludes: "This schoolmaster would probably be surprised

and perhaps even dismayed to hear that four centuries after he recorded his own puzzlement, we educators are still wrestling with the problem of when to start children to school."

So when is the right time to start children in kindergarten? Sweetland and DeSimone (1987) studied children who resided in the same school district for grades one through six to determine if birth dates had an effect on academic achievement. The results showed, in general, that children born in the later quarters of the year performed less well than children born earlier in the year for grades one through four.

Dietz and Wilson (1985) studied a group of 117 children who began kindergarten in 1979. They divided the children into three age groups at time of entry into kindergarten. Using standard achievement tests, their results found no significant differences in achievement at the kindergarten,

second or fourth grade levels.

With such conflicting reports, it is no wonder that 23 communities have five different enrollment cut off dates.

To further complicate matters, many studies have been done to determine if a child's gender would affect his reading readiness. Prescott (1963), using one readiness test, found that girls scored significantly higher than boys. Olson (1989) agrees, stating that the performances of the oldest boys were comparable with those of the youngest girls. This suggests that maturation and development play a major role in the differential effects due to age.

On the other hand, Nila (1953) states that on the basis of scores on a number of readiness tests, boys and girls were equally ready to read.

The majority of evidence supports the existence of sex

differences on reading achievement in the elementary schools. The relationship of these achievement differences to reading readiness is not clear, but significant differences between the sexes in reading readiness test scores adds to the evidence that girls come to school better prepared for formal reading instruction than do boys. Whether the differences are due to differential maturation of the sexes or to environmental influences is still an open question.

Hypothesis

To provide additional information on this topic in the interest of helping come to some conclusion, the following study was undertaken. It was hypothesized that neither school entry age nor gender make any difference in the academic achievement of second grade students.

Procedures

The children used for this study were all from the

Metuchen, New Jersey, public schools. Data was obtained by using the reading scores of the California Achievement Test which was administered to the 1993 - 94 second grade class. The scores of 121 students were used for this study. None of the scores of special education students were included.

The class was divided into two samples: late entrants, whose birthdays fell before June 30, 1986; and early entrants, whose birthdays fell between July 1 and December 31, 1986. A comparison of the means of these samples was made using the *t* test to determine if the second grade reading achievement of older students was significantly higher than that of the younger students.

The study was divided further by the gender of the students. The use of the *t*, comparing scores of male vs. female students was to determine what effect, if any, a child's gender had on his or her achievement.

The list of the students' birth dates, gender, and grade equivalent scores is included in Appendix A.

Results

As shown in Table One, below, the late starters

Table I

Number, mean, standard deviation and *t* of late starters vs. early starters

	#	Mean	Standard Deviation	*t*
Late starters	79	5.43	3.18	2.38
Early starters	42	4.16	1.76	

Sig. <.02

outnumbered the early starters by 37 students. The mean difference between the late and early starters was 1.27 grade equivalents. This mean difference was found to be significant below the .02 level.

Table two shows that there were three more males than

Table II

Number, mean, standard deviation and *t* of male vs. female.

	#	Mean	Standard Deviation	*t*
Male	62	4.84	2.90	0.29
Female	59	4.98	2.62	

N.S.

females in this population. The difference between the means of the two samples was a modest 0.14 and was found to be not significant.

Conclusions

The results permit rejection of a portion of the hypothesis which indicated that neither age nor gender would make a difference in achievement. Late starters scored significantly better than the early starters, whereas there were no gender differences in achievement. The Metuchen school

district is well advised to and is taking a step in the right direction by changing its cutoff date for school entry from December 31 to September 1, effective in September 1995, so that students would not be at a disadvantage in achievement because of an early start in school.

As a follow up, it would be interesting to compare the reading scores of future second grade students, who will enter school with a later cutoff date, to those utilized in the present study to confirm or deny the effects of a later start for all children.

It was surprising to see that there was no significant difference between the scores for males and females in this population. In the majority of the related research, most authors found that girls do better than boys. Further analysis might be done to determine achievement effects of starting age among the male population.

School Entry Age, Gender and Achievement:

Related Research

The age at which a child should start school has long been a subject of controversy and concern among parents and administrators. Would children benefit from a later entrance date for first grade? Is chronological age a sound criterion for determining readiness for school? Should boys enter school at the same age as girls? What could be learned from research and the experiences of other school districts?

A review of the literature on entrance age indicated a trend toward raising the minimum chronological age for school entry. This trend, which started in the early years of public school education, has continued to the present. Cominskey (1957) reported that in 1839, 86 of 786 children in school were under four years of age. Some children entered as young as two or three years of age.

In 1959, the National Education Association conducted an extensive study of the subject. The findings showed that

minimum starting ages in United States' schools varied from no established minimum to more than six years. But, these researchers reported a noticeable movement toward raising the minimum age. A trend toward using psychological tests of intellectual maturity also was noted.

The movements toward raising entry age and using tests were by no means rapid or uniform, partly because a behind-the-scenes struggle was taking place. Some were striving to raise the entrance age, while others were working diligently to maintain or lower it.

Gelles and Coulson (1959) summarized the position of educators who reported that schools in Bergen County, New Jersey, had adopted an earlier cutoff date. In reviewing the reasons for the change in policy, Gelles and Coulson stated that children of average intelligence younger than six years of age have a small chance of success in first grade. On average, children younger than six and one-half years are not

ready to read. Premature experience in learning to read may tinge the child's whole outlook with defeatism and resulting eyestrain and other physical and mental discomfort. Many younger children are able to keep up with the older children, but often at the cost of social, physical, or academic maladjustment, which may appear years later.

There is a strong current of parental pressure that is directed almost entirely at lowering the entrance age. Hall (1963) cites a variety of reasons for this desire.

Parents may want to get their children's formal education under way. Other parents may believe that their child is accelerated for his or her age. Both parents may be working. Living conditions and play facilities at home may be inadequate. Some parents may want their child to have the opportunity to enter college early. The reasons go on and on.

In the State of Washington, a survey of school

administrators revealed that school superintendents overwhelmingly favored a statewide uniform entry age (Hall, 1963). They also strongly favored that the age be set at six by September or earlier. A minority favored tests of maturity (mental, physical, or social, or all three) as the criteria for entrance.

Miller and Norris (1967), however, reported a nationwide sampling of superintendents' opinions made in 1955 which indicated that over half of the respondents favored the use of standardized tests rather than chronological age alone for assessing readiness for school.

The movement toward the use of mental age as a criterion for allowing children to enter school appeared after studies like those of Morphett and Washburne (1931) showed that children with a mental age of six and one half to seven and one half profited most from initial reading instruction.

In 1959, 6.6 percent of the districts polled in a national survey reported that they had no established school entry age (NEA, 1959). Of these, 90 percent used individual examinations to help determine school readiness.

The NEA did another survey in 1968. The results indicated that a vast majority of districts still used chronological age as the primary criterion for school entrance. More than three-fourths of the teachers surveyed did not agree with the proposal for delayed school entrance for boys. It appears that many administrators and teachers are not accepting a rigid entrance age requirement as the answer to a complex problem (Hirst, 1970).

Halliwell (1966) strongly disagrees with researchers who support the idea that early admission results in no adverse effects. "Early entrance to first grade does result in lower achievement throughout the grades when comparisons of achievement with control groups of later entrants of similar

abilities are made."

After reviewing the 1958 Kentucky statewide study on entrance age, Halliwell (1966) reported: "The evidence in this part of the study clearly indicates that students who enter first grade late have a general advantage over students who enter first grade early."

On the other hand, Miller and Norris (1967) state that no study has been done which proves conclusively that an older chronological age for first grade children is the solution to the problem, although some data and many opinions favor that viewpoint. Carter (1956) reported that according to his data, 87 percent of underage children do not equal the scholastic achievement of normal age children.

Carroll (1963) reported that average third grade children achieved consistently higher scores than their younger classmates. Dickinson and Larson (1963) found that fourth

grade younger students with higher IQs were not achieving as well as older children with lower IQs, suggesting that differences existing at early ages may become magnified as the group grows older.

Worcester (1956), however, concluded that "studies have agreed almost 100 percent that the younger student has the advantage over others in nearly every aspect -- and is at a disadvantage in almost no respect." This makes one wonder if everyone was reading the same literature.

Some researchers were concerned about the practical loss of a year of productive life for children required to postpone school entrance. Green and Simmons (1962) made a critical evaluation in light of their own investigation. "In terms of achievement for years of schooling, there would have been some advantage in waiting; in terms of achievement for years of life, there would have been some disadvantage."

Gabbard (1960) declared that age alone does not seem to be a sound criterion for the school admission policy or prediction of success. Andres (1965) found no significant correlations between chronological age and reading achievement at the end of first grade. Somwaru (1965-66) studied 24 kindergarten classes in the Toronto area through grade two. The conclusion was that age seemed to have very little, and sometimes negative, relationship with the ability to read. Dykstra (1966) in a study of more than 700 first grade children, found chronological age to be unrelated to reading ability.

It should be noted that whether the chronological entry age is either five or six, there will always be a "younger child" group (Freeman, 1990). Several studies have shown that the youngest children do not do as well as the older children in academic achievement and adjustment (DiPasquale, Moule, and Flewelling, 1980; Uphoff and Gilmore, 1986; and Karweit, 1992).

On the other hand, Kinard and Reinherz (1986) found that although differences by age did exist at school entry, there were no significant differences in third grade in either academic performance or school adjustment. They suggest that the effects of being the youngest disappear by the end of third grade.

Shepard and Smith (1987) also claim that differences disappear by Grade three. Miller and Norris (1967) place the disappearance at grade four; Davis, et al. (1980) at grade eight; and Langer, et al. (1984) at age 17. May and Welch (1986) stated that the differences had no effect on student achievement as early as grade two.

Karweit (1992) adds that because different states have different cutoff dates, the youngest child in one group might well have been the oldest in another group. The effect of youngness, therefore, is not due to absolute age, but to the relative position of a child within his or her group.

Another finding from the studies of long term effects of entrance age is that the sex of the child is an important mediating variable. In many results, the younger boys appear to account for the majority of the variance in lower achievement scores (Davis, et al., 1980; Dickinson and Larson, 1983; Kinard and Reinherz, 1986; Langer, et al., 1984).

Sex differences in reading comprehension, reading vocabulary or oral reading are not general, but are limited to children under 10 years of age, and sometimes only to pupils under ten who are of low reading attainment (Thompson, 1975). The evidence shows that a larger proportion of boys than girls make relatively slow initial progress in learning to read, but are no longer apparent after four or five years of school (Balow, 1963). But what is the origin of this gender difference?

It has been proposed that sex differences in reading attainment are the result of a "feminine bias" of the school

environment. There is a very high ratio of female to male teachers of pupils under 10 years of age. Typically, the child in his first few years at school has only female teachers. Some studies indicate that boys perceive school as feminine. Common objects in the classroom were categorized more frequently as feminine by both boys and girls (Kagan, 1964).

Evidence seems to be against the supposition of feminine bias in school reading books. In a content analysis of some popular basal series, Graebner (1972) found that the main characters of the stories were most frequently male. Boys outnumbered girls among the children appearing in the illustrations of the readers. Any bias in the content would appear to have been masculine rather than feminine.

Attempts have been made to relate differences in achievement to reading readiness. Prescott (1951), using one readiness test, found that girls scored significantly higher than boys. On the other hand, Nila (1953) found that on the basis

of scores on a number of readiness tests, boys and girls were equally ready to read provided they were given the same readiness skills.

Studies by Gates (1937) and Gates and Russell (1939) prove that readiness is not merely a matter of delay in reading instruction, but a development of the necessary skills, abilities and attitudes.

Slower physical maturation of boys than girls has been widely discussed as a hypothesis to account for the sex differences in reading attainment (Heilman, 1961; Rutter, et al., 1970). Nila (1953) maintains that boys do not mature as fast as girls and hence are less "ready" to learn reading. Whether the differences are due to differential maturation of the sexes or to environmental influences is still an open question.

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Appendix

Age, Gender, and Achievement Levels of the Population

Record #	Date of Birth			Gender	Grade Equivalent
1	6	23	85	Male	3.4
2	7	3	85	Male	3.7
3	7	23	85	Female	4.4
4	8	2	85	Male	6.2
5	8	23	85	Female	7.6
6	9	8	85	Male	2.5
7	9	13	85	Male	4.4
8	9	18	85	Female	3.6
9	10	2	85	Male	12.5
10	10	4	85	Male	2.3
11	10	7	85	Male	8.1
12	10	31	85	Male	2.4
13	11	4	85	Female	2.6
14	11	20	85	Male	4.4
15	11	26	85	Female	3.2
16	11	28	85	Male	3.1
17	12	9	85	Male	5.1
18	12	10	85	Male	5.5
19	12	11	85	Male	2.7
20	12	16	85	Female	7.6
21	12	17	85	Male	5.3
22	12	22	85	Male	3.7
23	12	24	85	Female	12.5
24	12	26	85	Male	2.9
25	12	29	85	Female	2.6
26	1	3	86	Female	5.5
27	1	6	86	Female	12.5
28	1	9	86	Female	4.2
29	1	13	86	Male	3.4

Age, Gender, and Achievement Levels of the Population (continued)

Record #	Date of Birth			Gender	Grade Equivalent
30	1	14	86	Female	5.6
31	1	22	86	Female	4.3
32	1	30	86	Female	7.6
33	1	31	86	Male	3.2
34	2	2	86	Male	2.5
35	2	5	86	Male	7.6
36	2	6	86	Male	12.5
37	2	7	86	Female	5.0
38	2	8	86	Female	3.8
39	2	12	86	Male	4.7
40	2	12	86	Male	3.3
41	2	15	86	Male	2.4
42	2	16	86	Male	5.4
43	2	16	86	Male	2.4
44	2	17	86	Female	5.1
45	2	18	86	Female	12.5
46	2	18	86	Male	2.9
47	2	26	86	Male	7.9
48	3	2	86	Male	5.2
49	3	5	86	Male	3.8
50	3	7	86	Female	12.5
51	3	9	86	Female	5.2
52	3	12	86	Male	4.7
53	3	18	86	Female	5.2
54	3	18	86	Male	2.6
55	3	21	86	Male	12.5
56	3	28	86	Male	3.1
57	4	4	86	Female	3.2
58	4	5	86	Male	12.5

Age, Gender, and Achievement Levels of the Population (continued)

Record #	Date of Birth			Gender	Grade Equivalent
59	4	6	86	Female	5.0
60	4	7	86	Male	12.5
61	4	8	86	Male	4.0
62	4	11	86	Female	4.4
63	4	18	86	Male	4.3
64	4	22	86	Male	4.2
65	5	9	86	Male	5.0
66	5	10	86	Female	4.5
67	5	17	86	Male	5.2
68	5	20	86	Male	4.0
69	5	20	86	Female	3.6
70	5	21	86	Male	5.4
71	5	22	86	Male	3.7
72	5	22	86	Female	2.5
73	5	23	86	Male	4.8
74	6	18	86	Female	5.2
75	6	22	86	Male	4.7
76	6	26	86	Male	12.5
77	6	27	86	Female	12.5
78	6	28	86	Male	1.6
79	6	29	86	Male	2.4
80	7	1	86	Female	3.6
81	7	1	86	Male	2.5
82	7	2	86	Male	2.4
83	7	8	86	Female	2.4
84	7	11	86	Female	3.0
85	7	22	86	Female	5.8
86	7	23	86	Male	3.7
87	7	24	86	Female	4.7

Age, Gender, and Achievement Levels of the Population (continued)

Record #	Date of Birth			Gender	Grade Equivalent
88	7	24	86	Female	2.3
89	7	28	86	Male	3.1
90	7	31	86	Female	3.2
91	8	1	86	Female	2.0
92	8	3	86	Female	5.2
93	8	10	86	Female	4.3
94	8	12	86	Female	5.3
95	8	13	86	Female	3.8
96	8	14	86	Male	4.2
97	8	20	86	Female	12.5
98	8	21	86	Female	3.5
99	8	26	86	Female	5.1
100	8	28	86	Male	2.8
101	8	31	86	Male	4.7
102	8	31	86	Male	2.7
103	9	4	86	Female	5.0
104	9	10	86	Female	4.1
105	9	26	86	Male	2.0
106	9	28	86	Female	4.9
107	10	1	86	Female	5.7
108	10	3	86	Female	3.7
109	10	4	86	Female	3.9
110	10	5	86	Male	5.4
111	10	18	86	Male	4.5
112	10	27	86	Female	5.6
113	10	28	86	Female	2.3
114	10	30	86	Female	4.0
115	11	6	86	Female	4.2
116	11	8	86	Female	5.1

Age, Gender, and Achievement Levels of the Population (continued)

Record #	Date of Birth			Gender	Grade Equivalent
117	11	11	86	Female	4.4
118	11	28	86	Female	3.3
119	12	10	86	Male	6.9
120	12	13	86	Female	3.7
121	2	13	87	Female	3.5