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ABSTRACT

This report describes a study that examined the question of whether or not a child's chronological age at school entry or gender affects his/her academic achievement. It posits 2 hypotheses: (1) that there is a low or negligible correlation between the chronological age at which a child enters kindergarten and a sample of the child's overall reading ability by the end of third grade; and (2) that there are no gender differences between reading achievement of similarly aged entrants. The population selected for this study included only students who entered kindergarten in the Hillside School System in New Jersey between January 1, 1986 and December 31, 1986 and continued in the district until their third-grade year. Using cumulative records, data were gathered on each student's birthdate, gender, and national percentile rank composite reading score on the Metropolitan Achievement Test (MAT) given in April (1995) of their third-grade year. The population was divided into early, medial, and late entrants. Results proved both hypotheses to be true. Conclusions would suggest that districts should use a multifaceted approach in the assessment of school readiness. Chronological age and gender do not seem to be adequate ways of predicting third-grade reading success. (Contains 6 tables of data, a section on related research, and 27 references. An appendix contains study population data.) (TB)

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

by

Lois Quinlan

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Abstract

This was a study of the reading achievements of 119 third grade students from the public school district of Hillside, New Jersey. The Metropolitan Achievement Test was administered to the students in the spring of 1995. The purpose of this study was to determine if either school entry age or gender had any effect on the reading achievements of these third grade students.

Acknowledgement

I would like to express my sincere appreciation to Dr. Albert J. Mazurkiewicz, Chairperson of the Department of Communication Sciences at Kean College, for his help and guidance in interpreting the results of this study.

Dedication

This paper is dedicated to my parents, Louis and Mildred, my husband, Tom, and my children, Brian, Kevin, and Jessica. Their loving support and patience has enabled me to complete this study.

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The optimum age for school entry has long been debated in the field of education. Yet even after many years of conflicting and confusing studies, no one entry age has been established. A survey of kindergarten entry cutoff dates in Union County reveals that although eleven communities have a cutoff of before the first of October, eight still have cutoff dates which are as much as three months later than that date.

In addition to this, Bracey (1989) and others have reported on the "graying of the kindergarten", that is a trend, especially in affluent communities, for parents to keep children who are of school age at home for another year. With the high mobility of our student population, a child who transfers from one school district to another, may be as much as sixteen months younger than his classmates. For this reason, Lofthouse (1987) has called for a national cutoff date for school entry.

This brings us to the question of whether or not a child's chronological age at school entry affects his academic achievement. Comparisons of

studies made on this issue are complicated by the fact that the populations involved in the studies come from school districts with a variety of school entry dates.

Many of the studies on school entry and academic achievement involve "summer fives," that is those students whose birthdays fall in June, July, August, and September. Studies by Carter (1956) and Crosser (1991) have found a positive correlation between later entrance into schooi and higher school achievement. Other studies like those by Davis, Trimble, and Vincent (1980) and Boyd (1989) have found a positive correlation in the primary grades which diminishes and even disappears as the children get older. Studies by Dietz and Wilson (1985) found no correlation between entry age and achievement but cautioned that in other districts, cutoff dates for school admission are up to five months earlier.

Studies by DeMeis and Stearns (1992) found no positive correlation between reading achievement and entry age while those by Sweetland and DeSimone

(1987) and Trapp (1995) have found significant correlations. In addition to this, research by Carter (1956), DeMeis and Stearns (1992), and Dietz and Wilson (1985) has suggested that gender may be a more significant factor in reading achievement than entry age. Other studies by Trapp did not find gender to be a significant factor in school achievement.

Additional research is needed to clarify the effect of chronological age and gender on reading achievement. In this time of great accountability and high mobility, educators need to know if there truly is an optimum age for school entry and if gender plays a role in this decision.

Hypothesis

This study was undertaken to provide additional information on the optimum age for school entry. It was hypothesized that there was a low or negligible correlation between the chronological

age at which a child enters kindergarten and a sample of the child's overall reading ability by the end of third grade. A second hypothesis was that there are no gender differences between the reading achievement of similarly-aged entrants.

Procedures

The population selected for this study included only students who entered kindergarten in the Hillside School System between January 1, 1986 and December 31, 1986 and continued in the district's schools until the present time.

Using the cumulative records of these fourth graders, data was gathered on each student's birthdate, gender, and national percentile rank composite reading score on the Metropolitan Achievement Test (MAT) given in April (1995) of their third grade year.

For the purpose of data analysis, the population was divided into three samples: late

entrants, that is those whose birthdates ranged from January 1, 1986 to April 1, 1986; medial entrants whose birthdates fell between May 1, 1986 and August 31, 1986; and early entrants whose birthdates fell between September 1, 1986 and December 31, 1986. A comparison was made of the means of these samples using the t test to determine if the third grade overall reading achievement scores of the three populations differed significantly according to the age at which the children entered kindergarten.

The study was divided further by the gender of the population. The t test was used to compare the scores of male versus female students to determine what effect, if any, gender would have on the students' achievement scores. The list of the students' birthdates, genders, and national percentile reading composite scores is indicated in Appendix A.

Results

The correlation between chronological age and reading achievement of the 119 third grade students was .08 and therefore not found to be significant. This is shown in Table I.

Table I

Mean, Standard deviation and correlation of the population

	M	SD	(r)
chronological age	105.07	3.33	0.08
reading achievement	56.10		

Table II indicates that the mean age difference between the 17 late male entrants and the 20 medial male entrants was 4.67 months.

Table II

Number, mean age in months, standard deviation, t, and significance of late, medial, and early male entrants

	#	mean	standard deviation	t	significance
late	17	109.45	1.18		
				13.34	<.01
medial	20	104.80	0.95		
				11.93	<.01
early	17	101.78	0.88		

This table also shows that the mean age difference between the 20 medial male entrants and the 17 early male entrants was 3.62 months. Both mean age differences were found to be significant below the .01 level.

As shown in Table III the mean age difference

Table III

Number, mean age in months, standard deviation, t, and significance of late male vs. late female entrants

	#	mean	standard deviation	t	significance
males	17	109.47	1.18		
				1.30	N.S.
females	19	109.00	1.00		

between the 17 late male entrants and the 19 late female entrants was 0.47 months. This mean age difference was found to be not significance. Based on this initial analysis. mean gender differences at each level were comparable and thought not significant.

Table IV indicates that the difference between

Table IV

Number, mean percentile score,standard deviation, t, and significance of late, medial, and early male entrants

	#	mean	standard deviation	t	significance
late	17	68.35	25.28		
				2.36	<.03
medial	20	48.90	24.75		
				-0.70	N.S.
early	17	54.76	25.81		
late vs. early entrants				1.55	N.S.

the mean percentile score for the 17 late male entrants and the 20 medial entrants was 19.45

points. This difference was significant below the .03 level.

This table also shows that the difference between the mean percentile scores for the 20 medial male entrants and the 17 early male entrants was 5.86 points. This mean difference was found to be not significant.

A further comparison of the mean percentile scores of the late male entrants and the early male entrants indicates a difference of 13.59 points. This difference was also found to be not significant.

Table V indicates that the difference between the mean percentile score for the 19 late and 23 medial female entrants was 2.93 points. This difference was found to be not significant.

This table also shows that the difference between the mean percentile scores for the 23 medial and 23 early female entrants was 5.92 points. This difference was found to be not significant.

Table V

Number, mean percentile score, standard deviation, t, and significance of late, medial, and early female entrants

	#	mean	standard deviation	t	significance
late entrants	19	59.63	24.90		
				0.41	N.S.
medial entrants	23	56.70	21.84		
				0.77	N.S.
early entrants	23	50.78	29.50		
late vs. early entrants				1.04	N.S.

A third comparison between the mean percentile scores of the 19 late and 23 early female entrants was 8.85 points. Again, this difference was found to be not significant.

Table VI indicates the mean percentile scores

Table VI

Number, mean percentile score, standard deviation, t, and significance of late, medial, and early entrants-males vs.female

	#	mean	standard deviation	t	significance
late males	17	68.35	25.28	1.04	N.S.
" females	19	59.63	24.90		
medial males	20	48.90	24.75	-1.10	N.S.
" females	23	56.70	21.84		
early males	17	54.76	25.81	0.44	N.S.
" females	23	50.78	29.50		

of the male and female students in each of the three chronological age intervals. The mean difference between the percentile scores of late male and female entrants was 8.72 points. This difference was found to be not significant.

The mean difference between the percentile scores of the medial male and female entrants was 7.80 points. This difference was found to be not significant.

The mean difference between the percentile scores of the early male and female entrants was 3.98 points. This also was found to be not significant.

Conclusions

As shown in Table II, the mean age difference between the late, medial, and early entrants was significant below the .01 level. Therefore, the sample groups used for the study were distinct enough to insure a proper comparison.

In reviewing Tables III and IV, a pattern of differences in the mean scores was noted betweeen the three age groups. In all comparisons except one, older male and female entrants achieved a higher mean score than younger entrants. The one exception was that the youngest male entrants performed better than their medial-aged counterparts.

The t of these comparisons, however, was found to be not significant in all cases except for the comparison of late and medial male entrants. In this comparison, a t of 2.36 was found to be significant below the .03 level. Yet a further comparison of late versus early male entrants yielded a t of 1.55 and was found to be not significant.

These results basically uphold the hypothesis of this study in that it was found that there is a low or negligible correlation between the chronological age at which a child enters kindergarten and a sample of the child's overall reading ability by the end of third grade.

A second hypothesis of this study was that there would be no gender differences between the reading achievement of similarly-aged entrants. As seen in Table III, the initial analysis between the mean ages of two samples was not significant. Therefore, the comparison was undertaken with reasonable certainty of its validity. The second hypothesis of this study was upheld in that there were no consistent differences in the mean scores that would favor either males or females, and the t revealed that the differences at each age interval were not significant.

In conclusion it would seem that districts would be well-advised to use a multifaceted approach to the assessment of school readiness. Chronological age and gender do not seem to be adequate ways of predicting third grade reading suceess. Other factors such as the quality of preschool experience, primary grade instruction, family life, and socio-economic factors may prove to be more significant ways of predicting third grade reading success.

School Entry Age, Gender and Achievement

Related Research

The optimum age for a child to enter kindergarten has been a controversial issue in the field of education for many years. Though plentiful, studies have produced conflicting results. Variations in socioeconomic factors and district cutoff dates have complicated comparisons and made it difficult to draw conclusions. Some researchers have also cited gender factors as being relevant to school entry age. The significance of the problem is further accentuated by the high mobility of our society, demands for accountability in public schools, and budget cutbacks in preschool education.

The launching of Sputnik in 1957 promoted the massive curriculum reform of the 1960's and pushed greater curriculum expectations into the kindergarten and primary grade programs. Some researchers feel that the academics behind this movement knew their disciplines, but were overly optimistic about "how fast and how much children could learn." (Elkind, 1981)

Many researchers contend that children who are chronologically older at school entry have an academic advantage over their younger peers. In 1934, Elizabeth Bigelow was one of the first to state that children had little chance of reading success before the age of six. (Davis, 1980)

Research by Carter in 1956 found that chronologically older children have an advantage over their younger peers and that this advantage remains constant throughout the elementary school years. Carter further states that when underage children produce equal or superior achievement or when overage children do not achieve, it is due to factors other than age.

In 1963, Carroll matched twenty-nine pairs of third graders by intelligence quotient, sex, socioeconomic status, and where possible, first school attended. In selecting third grade achievement, she felt that sufficient time had been allowed to cancel the effect that individual growth might have on early school performance. The variable factor in her study was chronological age

in that half of the students had their sixth birthday before entering first grade, and the other half had their sixth birthday in October, November, and December after enrolling in first grade. She found that the overage group tended to score consistently higher than their younger peers.

Research by Halliwell in 1966 agreed with this finding and claimed that at any grade level, the early entrant is seven months behind his older peers. In 1995, Trapp again found that older entrants had an advantage over their younger peers.

A study by Sweetland and DeSimone in 1987 found that chronological age per se was not a good predictor of academic success as measured by the Comprehensive Test of Basic Skills, but that birth quartile was. The most pronounced birth quartile effect was seen in the youngest group who scored significantly lower than all other quartile groups. Even though the effect became less pronounced with the fifth and sixth grade students, Sweetland and DeSimone suggested that kindergarten screening be

used to see which of the fourth quartile children are truly ready for school.

In reviewing research on the subject, Uphoff and Gilmore (1986) concluded that chronologically older students receive more above average grades and are more likely to score above grade level on standardized tests. They also state that younger entrants are more likely to fail at least one grade and to be referred for learning disabilities testing. They speculate that the effects of these academic problems can even last into adulthood.

In his study done in Nebraska, Uphoff (1985) found that of the student population, twenty-three percent were Summer Children (SC) who had birthdays which fell between the first of June and October fifteenth. Another nine percent consisted of Held Back Summer Children (HBSC), that is those whose birthdays were in the same time interval, but who entered school a year later. Uphoff found that the younger group made up seventy-five percent of the school's failure population, whereas none of the HBSC had failed. The SC group used in this sample

had higher intelligence quotient scores than the HBSC, yet their composite percentile scores on the Iowa Test of Basic Skills were the same for the boys and higher for the girls.

Lofthouse (1987) urged educators to establish a nation-wide school entry date and recommended one of September fifteenth. Bracey (1989) reported that many upper middle class parents are choosing to "red shirt" their kindergartners, that is to delay eligible children from beginning school. This option is taken especially with boys whose birthdays fall near the district's cutoff. He refers to this phenomenon as the "graying of the kindergarten" and indicates that it also leads to more pushing of the first grade curriculum into the kindergarten program. This puts lower middle and lower socioeconomic class students at risk, because often their parents cannot afford expensive preschool programs and send them to school earlier. In turn, these younger students have difficulty coping with the upgraded curriculum.

Cameron's findings (1990) supported the contention that older students had better reading and composite scores than their younger peers, with the exception of "redshirts", who would have been five by September fifteenth, but were held at home. He found that they showed no academic advantage in achievement as a result of delaying school entry a year.

On the contrary, other studies by Gilmore (1984) found that Held Back Summer Children had higher grade equivalent scores and higher teacher grades on maturity, cooperation, effort, and attitude, than Summer Children who entered school at the appropriate time. Bracey (1989) and Elkind (1981) also note that in many European countries, formal schooling is delayed until the age of seven, and yet their students do quite well.

After reviewing 8,000 studies, Moore (1985) suggests that he can find no evidence that children should begin formal schooling before the age of eight. He speculates that most children would benefit from a warm home environment, even if the

adults there have no teaching credentials. He states that stronger families would create stronger schools and that early schooling is a form of child abuse, because children sense their rejection.

Many studies have found that older entrants have a strong advantage over their younger peers in the early grades and that this advantage diminishes as schooling continues. Using a cutoff date of September first, Davis (1980) found that on the first and fourth grade Comprehensive Test of Basic Skills, older students scored significantly higher in reading, language, and math, but by eighth grade, the only significant difference was in reading.

Using the same September first cutoff, Boyd (1989) found that older entrants in the first to third grades scored higher than their younger counterparts, but that the difference decreased in fourth and fifth grades. There was still a significant difference favoring fifth grade females in reading.

Using forty-five pairs of summer birthdate fifth and sixth graders, matched for intellectual ability and gender, Crosser (1991) found that older summer birthdate children had a significant advantage over their younger counterparts in reading and math, but older summer birthdate females showed a significant advantage only in their overall test composite scores.

May and Welch (1986) grouped entrants into quartiles according to the district's December first cutoff and administered the Gesell School Readiness Test in May before each child's kindergarten entry, in the spring of the kindergarten year, and a year later in first grade. The researchers noted a diminishing difference between the scores of older and younger entrants until the third testing where the only significant difference was between the oldest and the youngest groups. Using the same population, the researchers analyzed the second and fourth grade Stanford Achievement Test scores and found no significant

differences between any of the birthdate groups or between the genders of the entrants.

In other research done two years earlier, May and Welch (1986) studied over two hundred second to sixth grade students who had scored below 4.5 on the Gesell Development Test when chronologically ready to enter school. The Buy a Year (BAY) group stayed home an extra year, while the Overplaced (OP) group had been assessed as developmentally immature, but entered school anyway. Using their second, fourth, and sixth grade scaled scores on the Stanford Achievement Test, the BAY students did not do as well as either the OP group or the Traditionally Placed students, even though they were approximately a year older at the time of testing. The researchers then concluded that the extra year at home did not help the scores of the BAY students.

Studies by Green and Simmons (1962) indicated that manipulating the entry age may be ineffective, because the youngest entrants will always tend to have more difficulty than their older peers and in

most cases, the younger entrants demonstrated average achievement. Bracey (1989) supports these findings by noting that this phenomenon is reported even in European countries where children begin schooling at the age of seven.

In the 1930's Carleton did an elaborate study where he compared children who began formal reading instruction in first grade with those who were introduced to reading in second grade. He found that the early advantage on reading tests disappeared by fourth grade. In addition to this, he conducted a long term follow-up study of this same group as adolescents, where impartial observers were asked to rate the reading behavior of these students. Without knowing which students began reading late, the observers picked out these students as more enthusiastic and spontaneous than those who were taught to read earlier. (Elkind, 1981)

In 1964, Mawhinney reported that Grosse Point, Michigan did away with their early entrance program for very bright children, because they found that

in the years to come, these children were poorly adjusted and lacked leadership qualities. In another study, researchers found that the rate for youth suicides was higher for summer birthdate children, especially for girls. (Uphoff and Gilmore, 1984).

In studies of first, second, third, and sixth graders, Jones and Mandeville (1990) considered the effect of age, sex, race and socioeconomic status on reading success and found that age played a smaller role on reading success than any of the other three factors. The researchers add that age is the only factor that is used as a criterion, because it is the only one that can be manipulated. The researcher suggests that it would be better for schools to plan for the "natural range of differences among eligible children."

Magliacano (1994) conducted a study in Bloomfield where the entry date cutoff was October first and found no significant differences in reading achievement scores on the Iowa Test of Basic Skills given at the end of first grade.

Other studies by DeMeis (1992) found that even though younger children with September to December birthdays generally did not have more academic problems than their older peers, they were referred for prefirst programs more often and for gifted programs less often than their older peers. Hirst (1970) also found that entry age was not a significant predictable variable for academic success in second grade or for predictions of success by kindergarten teachers.

Parsons (1985) felt that the establishment of a chronological age for school entry is done for facility in school accounting and is unfair, because all children differ in their development. She suggests that children begin first grade when their parents, school officials, and they themselves feel that they are ready.

In most school districts, chronological age is the sole criterion for school admission. Many researchers question the validity of this age cutoff and whether other factors may be of equal or

greater importance in determining readiness for formal reading instruction. (Kinard and Reinherz, 1986)

Dietz (1985) did a study in the West Delaware School District comparing entry age, gender, and scores on the Iowa Test of Basic Skills. He found that boys scored six months lower than girls in reading and four months lower than girls in their composite score. He noted that there were no significant interactions between the ages of the boys and their test scores.

In a study by Kinard and Reinherz (1986), they also found that boys tended to receive more services than girls. Again there were no significant interactions between the ages of the boys and their test scores.

In another study by Crosser (1991), she found that older summer birthdate males did have a significant advantage over their younger counterparts in reading and in math as measured by standardized tests. Other studies by Carter (1956)

and Walsh (1990) agree that males are more affected by chronological age differences.

Some feel that kindergarten screening would establish a developmental age and would be a more significant criterion for determining school readiness. This screening is costly and time-consuming.

In a study by Freberg (1991), students were grouped using a September first cutoff date. Their performance on the Stanford Achievement Test was rated "high" if it fell on or above the sixtieth percentile and "low" if it fell below the sixtieth percentile. Freberg found a highly significant difference between the older and the younger entrants. He concluded that we should limit entrance to those of the older group, while giving the GSRT to the younger group to determine readiness. This would cut cost, while allowing students who are younger to enter school when they are developmentally ready.

Walsh (1990) conducted a study by screening 2,400 students and placing them in a regular or a

junior kindergarten. He found that a significantly larger percentage of younger children were placed in junior kindergartens and forty percent of this group had December birthdays. Of the group recommended for the junior kindergarten, there was a greater percentage of young and poor males. He cautions that junior kindergartens may become a low socioeconomic male ghettos and/or the first step in tracking.

More studies need to be done to determine if there is an optimum chronological age for school entry. If chronological age is conclusively found to affect academic achievement, then perhaps a mobile society such as ours would be well-advised to move back the cutoff date to early fall or late summer and/or to establish a uniform national cutoff date for school entry.

If chronological age is not found to be a significant factor in academic achievement, then other factors such as gender, socioeconomic status, and developmental maturity may hold more significance. In order to address these factors,

we may have to initiate curriculum reform, kindergarten screening, and/or junior kindergartens and transitional first grades.

References

References

Boyd, Pamela. "The Relationship of Age Entrance to Kindergarten to Achievement in Grades 1 through 5." Paper presented at the Annual Meeting of the Mid-South Educational Research Association. Little Rock, Arizona. November 1989.

Bracey, G.W. "Age and Achievement." Phi Delta Kappan, Vol. 70 1989.

Cameron, Mary B. and Barry Wilson. "The Effects of Chronological Age, Gender, and Delay of Entry on Academic Achievement and Retention: Implications for Academic Redshirting." Psychology in the Schools, Vol. 27, July 1990.

Carroll, Marian L. "Academic Achievement and Adjustment of Underage and Overage Third Graders." Journal of Educational Research, Vol. 56, 1963.

Carter, Lowell B. "The Effect of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools." Journal of Educational Research, Vol. 50, 1956.

Crosser, Sandra L. "Summer Birth Date Children: Kindergarten Entrance Age and Academic Achievement." Journal of Educational Research, Vol. 84, No. 3, January/February 1991.

Davis, B. Glen, Trimble, C.S., and Denny R. Vincent. "Does Age of Entrance Affect School Achievement?" The Elementary School Journal, Vol. 80, No. 3, January 1980.

DeMeis, Joseph L. and Eleanor S. Stearns. "Relationship of School Entrance Age to Academic and Social Performance." Journal of Educational Research, Vol. 86, No. 1, September/October 1992.

Dietz, Carol and Barry J. Wilson. "Beginning School Age and Academic Achievement." Psychology in the Schools, Vol. 22, January 1985.

Elkind, David. The Hurried Child- Growing Up Too Fast, Too Soon. Reading, Massachussetts, 1981.

Freberg, Laura. "Relationship Between Chronological Age, Developmental Age, and Standardized Achievement Tests in Kindergarten." Psychology in the Schoos, Vol. 28, January 1991.

Green, Donald R. and Sadie L. Simmons. "Chronological Age and School Entrance." The Elementary School Journal, Vol. 63, October 1962.

Halliwell, Joseph W. "Reviewing the Reviews on Entrance Age and School Success." Journal of Educational Research, Vol. 59, No. 9, May/ June 1966.

Hirst, Wilma E. "Entrance Age- a Predictor Variable for Academic Success." The Reading Teacher, Vol. 23, No. 6, March 1970.

Jones, Molly M. and Garrett K. Mandeville. "The Effect of Age at School Entry on Reading Achievement Scores Among South Carolina Students." Remedial and Special Education, Vol. 11, Issue 1, March/April 1990.

Kinard, E. Milling and Helen Reinherz. "Birthdate Effects on School Performance and Adjustment: A Longitudinal Study." Journal of Educational Research, Vol 79, No. 6, July/August 1986.

"Kindergarten-Ready or Not?" H & R Educational Materials, Roseville, Minnesota, 1989.

Lofthouse, Russ. "A National Cutoff Date for Entering Kindergarten." Education Digest, Vol. 44-45, November 1987.

Magliacano, Karen. "The Effect of a Child's Age at School Entrance on Reading Readiness and Achievement Test Scores." M.A. Thesis-Kean, April 1994, ED 366933, CS 011619.

May, Deborah C. and Edward L. Welch. "The Effects of Developmental Placement and Early Retention on Children's Later Scores on Standardized Tests." Psychology in the Schools, Vol. 21, July 1984.

May, Deborah C. and Edward L. Welch. "Screening for School Readiness: The Influence of Birthdate and Sex." Psychology in the Schools, Vol. 23, January 1986.

Moore, Raymond S. "It Depends on Your Aim." The Phi Delta Kappan, Vol. 67, September 1985.

Parsons, Cynthia. "Let Children Start School When They're Ready!" The Phi Delta Kappan, Vol 67, September 1985.

Sweetland, John D. and Philip A. De Simone. "Age of Entry, Sex and Academic Achievement in Elementary School Children." Psychology in the Schools, Vol. 24, October 1987.

Trapp, Carol M. "The Effects of School Entry Age on Reading Achievement Scores of Second Grade Students." Master's Thesis-Kean, April 1995.

Uphoff, James K. and June Gilmore. "Pupil Age at School Entrance- How Many Are Ready for Success?" Young Children, January 1986.

Walsh, Daniel J. et al. "Knocking at Kindergarten's Door: Who Gets In? Who's Kept Out?" American Educational Research Association Annual Conference, April 1990, ED 319 539.

APPENDIX

AGE, GENDER, AND ACHIEVEMENT LEVELS
OF THE POPULATION

Record #	Birthdate	Gender	National Percentile
1	8-27-86	Male	26
2	2-11-86	Male	37
3	8-23-86	Male	21
4	7-23-86	Female	43
5	9- 2-86	Male	20
6	8-15-86	Female	39
7	11-11-86	Male	15
8	11-27-86	Female	16
9	4-21-86	Male	34
10	3-24-86	Female	75
11	3- 3-86	Female	43
12	8- 4-86	Male	17
13	2-11-86	Female	24
14	8- 3-86	Male	70
15	8-17-86	Female	90
16	6- 7-86	Female	63
17	8-23-86	Male	83
18	5- 6-86	Female	71
19	11-26-86	Male	39
20	2- 2-86	Male	90
21	5-11-86	Female	37
22	11-26-86	Male	37
23	6-12-86	Male	60
24	10-26-86	Female	89
25	10-27-86	Female	34
26	8-12-86	Female	50
27	11-14-86	Male	85
28	12-13-86	Male	90
29	2-14-86	Male	97
30	10- 4-86	Male	89
31	10-31-86	Male	92
32	7-25-86	Female	75
33	3-20-86	Female	98
34	4-17-86	Male	87
35	5-14-86	Female	64
36	10-14-86	Female	77
37	1- 3-86	Female	20

AGE, GENDER, AND ACHIEVEMENT LEVEL
OF THE POPULATION (continued)

Record #	Birthdate	Gender	National Percentile
38	1-17-86	Male	89
39	10- 1-86	Male	50
40	11-15-86	Female	5
41	11- 8-86	Male	50
42	6-13-86	Female	63
43	6-29-86	Male	19
44	10-17-86	Female	89
45	7-20-86	Female	30
46	12- 1-86	Female	26
47	11-19-86	Male	16
48	8-13-86	Male	44
49	12-20-86	Female	8
50	3- 1-86	Male	92
51	1-24-86	Male	24
52	12- 1-86	Female	54
53	10- 8-86	Female	75
54	4-20-86	Female	85
55	10- 4-86	Female	58
56	12-16-86	Male	68
57	7-16-86	Female	23
58	2-28-86	Male	92
59	7-23-86	Female	99
60	4-22-86	Male	74
61	10- 4-86	Female	77
62	12-30-86	Female	46
63	6-26-86	Female	43
64	8-21-86	Male	89
65	4-25-86	Female	28
66	12- 8-86	Female	66
67	8-14-86	Male	31
68	4-26-86	Male	46
69	4-19-86	Female	70
70	8-18-86	Female	50
71	1- 5-86	Male	71
72	6- 6-86	Male	68
73	12-19-86	Male	54
74	12-23-86	Female	34

AGE, GENDER, AND ACHIEVEMENT LEVELS
OF THE POPULATION (continued)

Record #	Birthdate	Gender	National Percentile
75	10-26-86	Male	58
76	8- 8-86	Male	37
77	4- 4-86	Male	87
78	3-24-86	Female	66
79	10-14-86	Female	24
80	10-17-86	Male	50
81	8-10-86	Female	43
82	9-29-86	Female	97
83	12-14-86	Male	79
84	2- 3-86	Female	70
85	6- 3-86	Female	63
86	9- 9-86	Female	66
87	6- 6-86	Male	63
88	4-10-86	Female	52
89	10-26-86	Female	43
90	7-30-86	Female	89
91	7- 1-86	Male	70
92	1-25-86	Male	34
93	2- 1-86	Female	66
94	6-17-86	Female	87
95	8-19-86	Male	94
96	4- 3-86	Female	79
97	12-22-86	Female	56
98	7-29-86	Male	35
99	11- 7-86	Female	96
100	6- 7-86	Female	19
101	11-11-86	Male	39
102	6-17-86	Female	64
103	3-22-86	Female	15
104	2-14-86	Male	64
105	6-24-86	Male	14
106	7-17-86	Female	58
107	8-26-86	Male	50
108	3-18-86	Female	64
109	10-22-86	Female	15
110	9-13-86	Female	17
111	6- 8-86	Male	37

AGE, GENDER AND ACHIEVEMENT LEVEL
OF THE POPULATION (continued)

Record #	Birthdate	Gender	National Percentile
112	1- 5-86	Female	58
113	3- 9-86	Male	92
114	3-20-86	Female	87
115	3-17-86	Male	52
116	4- 5-86	Female	43
117	7-11-86	Female	41
118	6-17-86	Male	50
119	4-24-86	Female	90