EFFECT OF SCHOOL ENTRANCE AGE

ON FOUR RECOGNITION VARIABLES OF

507 SENIORS AT CLARKSVILLE HIGH SCHOOL

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A Research Paper

Presented to

the Graduate Council of

Austin Peay State University

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In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in Education

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by

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To the Graduate Council:

I am submitting herewith a Research Paper written by Shiela Pardue Foust entitled "Effect of School Entrance Age on Four Recognition Variables of 507 Seniors at Clarksville High School." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Arts in Education, with a major in Guidance and Counseling.

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ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Many research studies have been concerned with school entrance age, and the issues related to early school entrance of bright children have provoked lively discussions for many years. In 1957 Comiskey reviewed early literature on school entrance problems and found that concern existed in this country in the early part of the nineteenth century (6, p. 3).

Most schools now admit children according to strict chronological age criterion. Although, admission procedures have long been controversial, it now appears more important than ever before to seek resolution of the issue. Since the main goal of primary education is to help the child to live to the fullest extent the natural life of a child, it is imperative that the relationship between chronological age and maturity, and the school curriculum be clarified (5, p. 292). But all too few persons appear to be conversant with the extent of society's crying needs for the more effective realization of the potentialities of the gifted -- those whose learning aptitude places them in the top five to ten percent of the adult population (2, p. 91).

The needs of precocious children, the increasing demand for high level talent, the growing tendency to prolong educational programs, the personal problems associated with delays of normal adult status for the gifted, and evidence regarding early ages of peak productivity all point to the necessity of early admission to school for the mentally advanced (6, p. 6). The use of only a chronological age differential for school admission should be critically examined.

Early school entrance is only one form of acceleration and has the advantage of six full years of education in elementary school rather than five which usually results in other methods of acceleration (1, p. 87). It should be pointed out that if more children were accelerated, the accelerated child would feel less conspicuous (4, p. 276). The development of the intellectual ability of all children is fundamental to the achievement of the goals of American education.

It has been widely accepted for some time now that children should be taught what they are capable of learning as they become ready for it (3, p. 27). Learning is most successful when tasks are adapted to the mental capacity of the individual at his level of maturation (2, p. 91). There is general agreement among educators that a child should enter the 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 is chronological age. Chronological age is not necessarily synonymous with any of the four developmental areas (7, p. 13). The objective of this study is to add evidence to the admission criteria of rigid adherence to chronological age vs. more flexible procedures.

Statement of the Problem

It was the purpose of this study to compare the effect of school entrance age on four recognition variables of the 507 students in the senior class at Clarksville High School during the 1967 - 1968 school year. The four areas of recognition were (a) academic recognition, determined by individual class rank; (b) teacher recognition, determined by membership in the National Honor Society; (c) social recognition,

determined by election to any school sponsored honor or office by their
peer group; and (d) athletic recognition, boys only, determined by "let-
tering" in bodily contact or non-bodily contact sports during the senior
year.

Purpose of the Study

The purpose of this study was to compare the achievement of the
four recognition variables attained by the 507 students in the senior
class at Clarksville High School during the 1967 - 1968 school year in
relation to their early, middle, or late birthdates in the year of 1950.
Statistical analysis of the data collected was used to determine whether
the students with late birthdays were handicapped in the achievement of
the four recognition variables by the fact that they were younger than
their classmates.

Importance of the Study

The Tennessee State law now requires that a child be six years of
age by September 30 to enter the first grade in the public school. In
1965 the school entrance age was changed from December 31 by the General
Assembly in accord with Public Acts of 1965, Chapter 303, Section 2. The
plan was to move the birthdate required for school entrance from Decem-
ber 31 at the rate of one month each year until 1968, when the require-
ment would be that a child be six years of age by September 30 to enter
the first grade in the public school. No provision for early school ad-
mission for the academically talented or gifted child has been stipulated.
Children whose mental age surpasses their chronological age are denied
admittance to the first grade in a public school if their sixth birthdate
occurs after September 30. Opportunity for early admission to the first

grade for the academically talented child occurs once in a child's life-time. The scholastic achievement of children with late birthdays in competition with children with early or middle birthdates has become a pertinent problem for administrators, teachers, and parents.

Limitations of the Study

This study was limited to the senior class of Clarksville High School in the school year of 1967-68. The data concerning academic rank were calculated from grades made during the three previous years in high school and the first semester of the senior year. The other data collected were achieved by the student during the 1967 - 1968 school year only. Intellectual, environmental, and motivational components were not determined. The study was further limited by the small group of students with September 1 to December 31 birthdates in 1949, who did not enter the first grade until after their sixth birthday. There was no determination of the number of students or the birthdates of those students who "dropped out" or were transferred from the senior class prior to the beginning of the second semester of the 1967-1968 school year. Only students who were academically ranked after the completion of the first semester were included in the study.

Hypotheses

The null hypotheses were tested by statistical analysis of the data collected and are stated as follows:

1. There is no significant difference in academic rank as determined by class rank of students with late birthdates as compared with students with early or middle birthdates.

2. There is no significant difference in teacher recognition of students with late birthdates as compared with students with early or middle birthdates.

3. There is no significant difference in social recognition of students with late birthdates as compared with students with early or middle birthdates.

4. There is no significant difference in athletic recognition of boys with late birthdates as compared with boys with early or middle birthdates.

Definition of Terms

1. <u>Early</u> <u>birthdate</u> or <u>Group</u> <u>I</u>: Students whose birthdate occurred from January 1 through April 30 of specified year.

2. <u>Middle</u> <u>birthdate</u> or <u>Group</u> <u>II</u>: Students whose birthdate occurred from May 1 through August 31 of specified year.

3. <u>Late</u> <u>birthdate</u> or <u>Group</u> <u>III</u>: Students whose birthdate occurred from September 1 through December 31 in 1950.

4. <u>Group</u> <u>III-A</u> or <u>non-repeat</u>: Students whose birthdate occurred from September 1 through December 31 in 1949; and who entered the first grade in the fall of 1956, after their sixth birthdate and have spent twelve years in grades one through twelve.

5. <u>Group</u> <u>III-B</u> or <u>repeat</u>: Students whose birthdate occurred from September 1 through December 31 in 1949; and who entered the first grade in the fall of 1955, after their fifth birthdate, and have spent thirteen years in grades one through twelve.

6. <u>Class</u> <u>rank</u>: Referred to the academic position of a student compared with the other 487 students who were ranked. The lowest number, 1,

indicated the highest rank; conversely the highest number, 488, indicated the lowest rank.

Source of the Data

The birthdate data for this study were obtained from the cumulative records, registration cards, guidance folders, and by interviews. The data concerning academic class rank were obtained from Mr. Howard Thompson, principal at Clarksville High School. The membership in the National Honor Society was obtained from the records in the guidance office. Data concerning peer recognition were secured from the Clarksville High School annual and the secretaries of the various organizations. Data related to athletic recognition were determined from the CHS annual and athletic coaches.

Organization of the Study

Statistical analysis of the data is presented in the form of tables in order to make the information more easily understood. Chapter I discusses the problem of the study. Chapter II presents a review of the previous research in the area of early school entrance and acceleration. Chapter III presents and interprets the data and tables formulated in the study. Chapter IV gives a summary, conclusions, and recommendations for further study.

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REVIEW OF PREVIOUS RESEARCH

Many studies have been made concerning school entrance age. An opinion poll conducted and reported by The Nation's Schools in 1955, showed that about half of the school superintendents of the country (52.9%) were favorable "in theory" to entrance based on mental, physical, and emotional maturity. However, because of practical problems, such as test unreliability, parental opposition and lack of funds, it was considered best to retain chronological age as the single control for admission (28, p. 3). The problem has never lacked controversy.

Terman's notable continuing studies of his gifted child group have added impressive new evidence for the value of rapid progress in school of able young people (8, p. 228). Many others have recommended that superior pupils should progress more rapidly through school and college enabling them to graduate from high school at age seventeen rather than eighteen (19, p. 99). Mirman's findings indicated that the bright pupil can profit from spending less time in the elementary school grades and using the time saved for advanced studies in high school and college (23, p. 276).

A report by Durkin revealed a majority of bright pre-school readers achieved higher in reading after only five years of school instruction than non-early readers of the same intellectual level who have had six years of instruction. The evidence indicated the advantage of learning to read at an earlier chronological age (5, p. 80.).

A. Edward Ahr's study of a early school admissions program begun in 1959 reported 97% of the early entrants as average or above in relation

to their older peers in intellectual ability (1, p. 235). Research by Norman, Clark, and Bessemer found achievers were significantly younger than nonachievers (26, p. 122).

The Educational Policies Commission believes the practice of accepting six as the normal school entrance age is obsolete. All children, the report continued, should have the opportunity to go to school at public expense beginning at the age of four (7, p. 1). Nimnicht, Sparks, and Mortensen's findings indicated a significant relationship between IQ 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 the child's school success; and between the child's sex and school success -- girls tended to achieve at a higher level. Results appeared to show that the variable most commonly used -- age - was the least reliable and that IQ scores, the father occupation, and their sex could be used to more accurately predict success in the first grade (25, p. 34).

The research of Elizabeth H. Stokes in the comparison of underage and overage children emphasized the need for a flexible school entrance age based on readiness. The data indicated the need for other criteria in addition to chronological age to indicate readiness to enter school (33, p. 90).

Conversely, Carter stated 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 (4, p. 91). Halliwell supported the

position that early entrance to first grade did result in lower achievement throughout the grades when comparisons of achievement with control group entrants were made with later entrants (10, p. 400). Research by A. Montgomery Johnson showed that success in reading seemed to be positively associated with older entrance. This appeared to be true regardless of ability level (14, p. 385).

However, the findings of Brzeinski, Harrison, and McKee reflected emerging psychological theory and recent research evidence indicating that children profit from early education stimulation (3, p. 24). Isaacs 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 (13, p. 73). Gallagher and Kazrinka have pointed out that follow up studies of early entrants, usually found them doing better than the average child in their grade. Similarly good reports have come from other studies in Nebraska, Massachusetts, and Pennsylvania (13, p. 73).

Evidence by McCandless indicated that very superior children have tended to benefit in all areas from effective and discrete application of the special techniques that have been used in their education. Among the listed techniques was early school admission according to psychologically and physically sound criteria (20, p. 374).

In contrast, the findings of Halliwell and Stein concluded that pupils who entered school early were significantly poorer in academic achievement than were pupils who entered school later. They further pointed out that despite the fact that the younger pupils were significantly inferior to the older pupils in almost every academic area evaluated, that

when the raw scores were converted to grade equivalents, the mean grade equivalent of the younger pupils was still above grade level. This would seem to indicate that although such pupils might do well in comparison with the older pupils of less ability, they would not do nearly as well as older pupils of similar ability (11, p. 638).

Jones found many indications that age alone was an inadequate gauge of school accomplishment (16, p. 108). All of the research evidence of the twentieth century vigorously opposed forcing formal instruction upon children at an early age, stated Helen Heffernan (12, p. 60). A study covering fourteen years of children admitted to kindergarten before five years of age found that among those who were not hand picked for early entrance, 25.3% were below average or had repeated a grade (32, p. 231).

A study of acceleration by King made in three outstanding midwest school districts pointed out the success of acceleration in meeting the academic needs of gifted children (17, p. 262). Schwartz's research on readiness reported that readiness was a developmental stage in the growth period, not an age (30, p. 83).

At the turn of the century, Dewey and Patrick challenged the idea of a fixed age for school admission. Evidence accumulated since their day has added support to their belief (29, p. 18). Durkin has found the lower IQ child had a distinct advantage over those of similar IQ if he learned to read early. She added that this would seem to question the notion that reading instruction should be postponed for the child with a relatively lower IQ (6, p. 128).

Results of a questionnaire from 749 educators revealed fifty percent favored one and one-half years of more rapid progress than usual for the

gifted (34, p. 122). Witty commented that during the past thirty years, acceleration or grade skipping had again and again been proposed as a desirable way of meeting the educational needs of the gifted. As early as 1933 findings showed moderate amounts of acceleration seem justified - especially in the lower grades (35, p. 228). Birch felt that early admission to first grade seemed to combine most of the favorable features associated with acceleration and to minimize unfavorable features (2, p. 87).

A report of the study of the Brookline, Massachusetts, Program of Early Admission to Kindergarten, initiated in 1932 and evaluated in 1956, has provided the following conclusions: (a) The scholastic superiority in elementary school of underage children continued and increased through high school. (b) Underage accelerates engaged in a significantly larger average number of extra curricular activities. (c) Underage exceeded their fellows two to one in the matter of honors, awards, etc. (d) Significantly larger percentage of underage graduates sought and gained admission to colleges. (e) Study of early school entrance practice for children who demonstrated their maturity showed that they were not handicapped when compared with the average of their older classmates and was the ideal means of making initial provision for individual differences (28, p. 24).

An outstanding study of the Early Admissions Program in Evanston, Illinois, indicated that carefully chosen children who were accelerated compared favorably with others who were older in the grades in which they were located (28, p. 34). The report of the Early Admission Program in Minneapolis, Minnesota, concluded that this type of acceleration

was adapted to meet the needs of gifted children. Most of those who were allowed to enter were generally successful and maintained their superiority (28, p. 41). Researchers of the Twelve Years of Early Admission Study in Nebraska (28, p. 50), stated that, "would that we could be assured that as many of our regular entrants would adjust and progress as well in school as do the early entrants."

One of the chief arguments against early school admission is that it places the child in competition with older pupils and thus adds to his problems of social adjustment. Research does not always support this position. Mirman found accelerated students scored as high as the non-accelerated students on The California Psychological Inventory used for measuring social adjustment, not only on the test as a whole, but on the four major divisions of the test as well (23, p. 276). He further stated that holding back the capable child could result in loss of interest, in poor work habits, and a generally poor attitude toward learning.

Ahr reported that the ratings of social, emotional, physical, and motor development indicated that early entrants were average in these areas when compared with regular entrants in top classes (1, p. 235). The findings of Stokes indicated that chronological age was not the most important criterion for social acceptance, but the intellectual level of underage children appeared to be a more important criterion for social acceptance (33, p. 84).

Johnston's findings indicated there was no significant difference in the emotional adjustment of accelerated students and their older classmates, but that the differences between the boys and girls were highly

significant in this area (14, p. 387). In a later study he stated that groupings of older and younger students slightly improved the accelerated students opportunity for personality and social development (15, p. 219). Findings by Pielstick showed that selectively accelerated gifted pupils achieved as well as their older classmates who were of equal ability and did not usually suffer personal or social ill effects (27, p. 126).

In contrast, King concluded from results of his study that younger entrants were likely to show more indications of poor personal and social adjustment in school (18, p. 336). Medinnus observed that later adjustments of a child might well be affected by early school failure experiences (22, p. 68).

Since Terman's longitudinal studies it has been generally accepted that gifted students will show superiority in measurable dimensions such as physical development as well as social and emotional adjustment (9, p. 39). Carter stated the factor of chronological age had more effect on boys in relation to success in school (4, p. 102). Mirman found more girls than boys should be accelerated. Girls did not encounter the social problems that some boys do, and girls did not mind being among the younger members of a class (23, p. 276). Smith reported that using the "average" for children of the same sex and chronological age as a base, the gifted children in his study had a superior physique as demonstrated by earlier walking and talking and above average weight, coordination, endurance, and general health (31, p. 370).

This summary of some of the relevant research describes practices and results in a number of communities in which early admission policies have been tried and found successful. The findings of scientifically

conducted, authenticated research have repeatedly indicated many developmental factors other than chronological age are involved in readiness for school, and conversely many factors other than chronological age are related to a child not being ready for school. Research on acceleration through early admission to school is overwhelmingly favorable although there are some well documented research findings that may be considered negative. It may be concluded from the research quoted that early admission policies, carefully administered by a qualified staff and adapted to the needs of the community is a promising solution to meet the needs of academically talented children.

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CHAPTER III

PRESENTATION AND INTERPRETATION OF THE DATA

There were 507 students in the senior class of Clarksville High School in Clarksville, Tennessee, during the 1967-68 school year. Nineteen students were not academically ranked, the remaining students were ranked from 1 to 488. This study was concerned with the 373 students born in 1950 and the 87 students born in 1949. Table I gives the number of academically ranked students born in each year. Table II gives the number of students with birthdates in 1950 and in 1949.

TABLE I

NUMBER OF ACADEMICALLY RANKED STUDENTS

Year of Birth	1950	1949	1951	Years prior to 1949	Entrance Age Unknown	Total
Number	373	87	5	17	6	488

TABLE II

NUMBER OF STUDENTS WITH BIRTHDATES IN 1950 and 1949

1950	Group I (early)	Group II (middle)	Group III (late)		Total
Girls	58	67	66		191
Boys	62	56	64		182
Both	120	123	130		373
1949	Group I (early)	Group II (middle)	Group III-A (non-repeat)	Group III-B (repeat)	Total
Girls	6	8	10	10	34
Boys	20	15	3	15	53
Both	26	23	13	25	87

The students in Group III, whose birthdates are from September 30, 1950, through December 31, 1950, would not now be permitted to enter the first grade until after their sixth birthdate according to the present Tennessee state law. The 1950 Group III (late birthday) students were statistically compared with 1950 Group I (early birthday), 1950 Group II (middle birth), and 1949 Group III-A (non-repeat) students to determine if there was a significant difference in the achievement of the four recognition variables: (a) academic recognition, determined by individual class rank; (b) teacher recognition, determined by membership in the National Honor Society; (c) social recognition, determined by election to any school sponsored honor or office by their peer group; (d) athletic recognition - boys only, determined by "lettering" in the bodily contact sport of football, or non-bodily contact sports of basketball, baseball, tennis, track, or golf.

(a) Academic Rank Recognition Variable: The class rank of each student was calculated by the school officials from the grades made during the first three and one-half years in high school. Table III indicates the mean of the academic class rank of each of the groups included in the study.

TABLE III

MEAN OF ACADEMIC CLASS RANK

Year	1950 I	1950 II	1950 III	1949 I	1949 II	1949 III-A	1949 III-B
Girls	157.07	203.10	195.59	306.58	412.25	246.95	315.10
Boys	266.63	183.58	269.82	370.68	361.91	295.33	323.07
Both	213.68	194.21	232.14	355.88	379.41	258.12	319.88

As shown by Table III the highest mean rank score, 157.07, was earned by the 1950 Group I (early birthday) girls and the lowest mean rank score, 412.25, was earned by the 1949 Group II (middle birthday) girls, who had repeated a grade. The lowest mean rank score earned by boys, 370.68, was by the 1949 Group I (early birthday), who were the oldest boys with birthdates in 1949 and 1950. These data suggest that the additional months of chronological age were not advantageous in relation to earning a higher class rank. The mean rank score for those students who transferred or dropped out after the beginning of the second semester of the 1967-1968 school year was 381.74, lower than any mean score earned by the groups included in the study.

The Kruskal-Wallis one-way analysis of variance by ranks was used for testing the difference between independent groups with varying numbers of cases per group. The following formula for determining the H quantity was used (1, p. 378):

$$H = \frac{12}{N(N+1)} \sum \frac{T_g^2}{m_g} - 3(N+1)$$

After re-ranking the three 1950 groups from 1 to 373 the computed value of the H statistic was 15.577. The number of degrees of freedom was two. Since chi square is 5.99 for 2 df at the 5% level of significance, the null hypothesis was rejected. The mean of the re-ranked Group I (early birthdate) was 189.6, the mean of Group II (middle birthday) was 172.4, and the mean of Group III (late birthday) was 201.0. Further analysis was performed to locate the significant differences among the three groups.

The Kruskal-Wallis test was applied to test for significance of difference between 1950 Group I (early birthday) and Group III (late

birthday). The 1950 Groups I and III were ranked from 1 to 250. Quantity H was calculated to be 7.884 with one degree of freedom. Since chi square is 3.84 for one df at the 5% level of significance, the null hypothesis was rejected. Group III (late birthday) had a significantly lower mean rank than the Group I (early birthday). The mean of Group I (early birthday) was 122.4 and the mean of Group III (late birthday) was 130.26.

To compare 1950 Group II (middle birthday) and Group III (late birthday), Kruskal-Wallis analysis of variance was applied to the ranking from 1 to 253. Quantity H was computed to be 17.935. Since chi square is 3.84 with one df at the 5% level of significance, the null hypothesis was rejected. Group III (late birthday) had a significantly lower mean rank than the Group II (middle birthday). The mean of Group II (middle birthday) was 117.0, and the mean of Group III (late birthday) was 136.5.

To examine the difference between 1950 Group III (late birthday) and 1949 Group III-A (late birthday, non-repeat), the students were ranked from 1 to 143. The calculated value of the H statistic was 5.735 with one df. Since chi square is 3.84 for one df at the 5% level of significance, the null hypothesis was rejected. The 1949 Group III-A (late birthday, non-repeat), had a significantly lower mean rank than the 1950 Group III (late birthday). The mean of 1950 Group III (late birthday) was 72.01, and the mean of 1949 Group III-A (late birthday, non-repeat) was 78.73.

Statistical analysis showed a significant difference in the academic mean rank of the 1950 Group III (late birthday) when compared with the 1950 Group I (early birthday) and 1950 Group II (middle birthday). This analysis determined that the students with late birthdays were disadvantaged in the academic rank variable when compared with their older

classmates born the same year. This would indicate that chronological age is one important variable to be considered in setting school admission policies. However, statistical analysis showed a significant difference in the mean class rank favoring the 1950 Group III (late birthday) students when they were compared with their classmates, the 1949 Group III-A (late birthday, non-repeat) students, who were born a year earlier and were "held out" and not allowed to start the first grade until they were approaching their seventh birthdate. This significant difference is particularly pertinent since these students with the higher mean class rank are the very students with late birthdates who would not now be permitted to enter first grade, if their sixth birthday occurred after September 30, according to the present Tennessee state law.

Table IV shows the number and percentage of students from each of the groups whose rank score placed them in the upper one-fourth of the class or Q_1. Table V indicates the number and percentage of students from each of the groups whose rank score placed them in the lowest one-fourth of the class or Q_4. The percentage in each group was calculated by dividing the total number of students in the group into the number of students from that group whose rank score placed them in the specified quartile.

TABLE IV

NUMBER AND PERCENTAGE OF STUDENTS IN Q_1

	1950							1949						
	I		II		III		I		II		III-A		III-B	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Girls	28	48.28	19	28.36	25	37.88	1	16.67	0	0.0	2	20.0	1	10.0
Boys	9	14.52	21	37.50	11	17.19	0	0.0	1	6.67	1	33.33	3	20.0
Both	37	30.83	40	32.52	36	27.69	1	3.85	1	4.34	3	23.08	4	16.0

TABLE V

NUMBER AND PERCENTAGE OF STUDENTS IN Q_4

| | 1950 | | | | | | 1949 | | | | | | |
| | I | | II | | III | | I | | II | | III-A | | III-B | |
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Girls	4	6.90	11	16.42	10	15.16	2	33.33	6	75.00	3	30.00	2	20.00
Boys	15	24.19	4	7.14	21	32.81	11	55.00	9	60.00	1	33.33	8	53.33
Both	19	15.83	15	12.20	31	23.84	13	50.00	15	65.22	4	30.77	10	40.00

Chi square was used to test for the significance of difference in the number of students from the 1950 Group I (early birthday), Group II (middle birthday), and Group III (late birthday) whose rank score placed them in the first quartile. Chi square was calculated to be 7.359. Since chi square is 9.49 with 4 degrees of freedom at the 5% level of significance, the findings show that there is no significant difference in the number of students from each of the three 1950 groups in the upper one-fourth of the class. These data further indicate that the students with late birthdays have not been handicapped by their chronological age in earning academic rank scores placing them in the top one-fourth of their class, since slightly more than one-fourth of these students are in the upper quartile. It is assumed that these students are the brighter late birthday children and that they are capable of successfully competing with older classmates scholastically.

Chi square was used to test for the significance of difference in the number of students from the 1950 Group I (early birthdate), Group II (middle birthdate), and Group III (late birthdate), whose rank score placed them in the fourth quartile. Chi square was computed to be 10.642. A chi square value of 9.49 is significant at the 5% level of significance

with 4 df. This result indicated that there was a significant difference in the number of students with late birthdates who earned scores in the lowest fourth of the class and the number of students with early and middle birthdates who earned scores in the lowest fourth of the class. This suggests that chronological age is one factor that may hinder school progress for some students. It is assumed that those in the lower group are the least academically alike students. Again the difference between boys and girls is obvious with fewer girls in the group than would be expected, but more boys than would be expected.

There were 27.69% of 1950 Group III (late birthday) in the top one-fourth of their class and 23.08% of 1949 Group III-A (late birthday, non-repeat) in the upper one-fourth of the class. The 1950 Group III (late birthday) had 23.84% in the lowest quartile, and 30.77% of 1949 Group III-A (late birthday, non-repeat) were in the fourth quartile. Such data suggest that just "holding" children out of school until they are a year older does not provide a clear advantage.

Examination of the data further suggests that the boys were less able to compete than the girls. It is interesting to note, however, that there was a smaller percentage of the early birthdates or oldest boys in the first quartile, with the middle boys having the largest percentage of their group in the top quartile. The expected frequencies were too small to test for the significance of difference by sex. These data again suggest the need to consider factors other than chronological age in setting school entrance policies.

Although the mean class rank of 1950 Group III (late birthday) was significantly lower than the 1950 Group I (early birthday) and 1950 (middle birthday), it is considered important to note that the two students

who tied for first rank in the class of 507 had late 1950 birthdates.
Seven of the top ten in class rank in the class of 507 were Group III
(late birthdates). Four were girls and three were boys. Such data in-
dicate the need for some criteria other than chronological age as these
students would have been prevented from entering school until a year later
if the present law had been in effect.

(b) Teacher Recognition Variable: Membership in the National Honor
Society was determined by faculty election. Seventy of the 507 students
were elected as members. Table VI gives the number of members in each
group.

TABLE VI

NUMBER OF STUDENTS IN NATIONAL HONOR SOCIETY

Year	1950 I	1950 II	1950 III	1949 I	1949 II	1949 III-A	1949 III-B	Total
Girls	16	13	16	0	0	1	0	46
Boys	6	11	6	0	0	1	0	24
Both	22	24	22	0	0	2	0	70

Chi square was used to test for the significance of differences be-
tween the 1950 Groups I, II, and III. Chi square was computed to be .234.
A chi square of 5.99 is significant at the 5% level of confidence with 2
df, therefore, the null hypothesis of no significant difference in the
three groups was accepted.

The data show that none of the students with 1949 birthdates who
spent thirteen years in the twelve grades were members of the National
Honor Society, implying that some factor other than chronological age is
significant in this variable. The data further point out that the stu-
dents with late birthdates are not disadvantaged by their chronological

age in gaining recognition through membership in the National Honor Society. A total of 46 girls and 24 boys from all groups was elected to membership in the National Honor Society. This further supports the position that the sex variable is another factor to be considered in resolving school admission policies.

(c) Social Recognition Variable: This variable was determined by election to any school sponsored honor or office by the peer group. Only one credit for recognition was given per student even though many students had several recognitions. A total of 79 students were recognized by their peers. Table VII gives the number of members in each group.

TABLE VII

NUMBER OF STUDENTS WITH SOCIAL RECOGNITION

Year	1950 I	1950 II	1950 III	1949 I	1949 II	1949 III-A	1949 III-B	Total
Girls	12	15	21	0	0	2	1	51
Boys	7	9	8	2	0	1	1	28
Both	19	24	29	2	0	3	2	79

Chi square was used to test for the significance of differences between the 1950 Groups I, II, and III. Chi square was calculated to be 1.369. A chi square of 5.99 is significant at the 5% level of confidence with 2 degrees of freedom. The null hypothesis of no significant difference in the three groups was accepted.

Further calculations determined that 22.31% of 1950 Group III (late birthdate) had peer recognition, 19.51% of 1950 Group II (middle birthdate), 15.83% of Group I (early birthdate), and 23.07% of 1949 Group III-A (late birthdate, non-repeat). The data show that the 1950 Group III (late

birthdate) gained more recognition as a group than did the early and middle birthdate groups. However, it was considered important that the oldest group of non-repeaters, the 1949 III-A group, received the highest percentage of peer recognition. Apparently, age is not an important factor as the youngest and oldest of the four experimental groups received the most recognition. It is of interest to note that the girls had more recognition than did the boys.

(d) Athletic Recognition Variable: (Boys only) This variable was determined by "lettering" in the bodily contact sport of football, or non-bodily contact sports of baseball, basketball, tennis, track, or golf. Table VIII gives the number of boys in each group.

TABLE VIII

NUMBER OF STUDENTS LETTERING IN SPORTS

Year	1950 I	1950 II	1950 III	1949 I	1949 II	1949 III-A	1949 III-B	Total
NBC	4	7	4	2	2	1	1	21
BC	3	7	4	2	2	0	0	18
NBC & BC	0	0	2	1	2	0	0	5
Total	7	14	8	4	4	1	1	39
Percent	11.2	25.0	12.5	20.0	17.4			

Chi square was used to test for the significance of differences between 1950 Groups I, II, III. The 1949 groups could not be tested as the expected frequency was less than five. Chi square was computed at 3.431. A chi square of 5.99 is significant at 5% level of significance with two degrees of freedom, therefore, the null hypothesis of no significant difference in the three groups was accepted. The analysis showed no

significant difference between the groups, indicating that a late birth-
date had not been a disadvantage in earning athletic recognition.

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CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS
FOR FURTHER STUDY

Summary

The purpose of this study was to compare the effect of school entrance age on four recognition variables of the 507 students in the senior class at Clarksville High School during the 1967-1968 school year. The four areas of recognition were (a) academic recognition, determined by individual class rank; (b) teacher recognition, determined by membership in the National Honor Society; (c) social recognition, determined by election to any school sponsored honor or office by their peer group; and (d) athletic recognition (boys only), determined by "lettering" in bodily contact or non-bodily contact sports during the senior year. Statistical analysis of the data collected was used to determine whether the students with late birthdates were handicapped in the attainment of the four recognition variables by the fact that they were younger than their classmates, who had early and middle birthdates.

Chronological age is now virtually the only factor considered in admitting children to school in most areas, and obviously is one criterion that should be considered. The objective of this study was to add evidence to the need for more flexible criteria rather than rigid adherence to chronological age.

The data for this study were obtained from the cumulative records, registration cards, guidance folders and records, high school annual, school principal, coaches and secretaries of various student organizations.

The data concerning academic rank were calculated from grades made during the first three and one-half years in high school, through the first semester of the senior year. The other data collected were attained by the student during the 1967-1968 school year only. Intellectual, environmental, and motivational components of the students were not determined.

The null hypotheses that there was no significant difference in academic class rank, in teacher recognition, in social recognition, and in athletic recognition (boys only), of students with late birthdates when compared with students with early or middle birthdates of the same year, were investigated. The data were tested by statistical analysis.

Eighty-seven students born in 1949 and 373 born in 1950 were divided into seven groups according to their birthdates. The other forty-seven students either had birthdates in 1951, birthdates prior to 1949, had an undetermined school entrance age, or were not academically ranked in the class.

The Kruskal-Wallis one-way analysis of variance by ranks was used to test for the significance of difference in the mean academic class rank scores earned by students with early, middle, and late birthdates in 1950. The value of H was significant at the 5% level which led to the rejection of the null hypothesis. The test was again applied to test the difference between the late and early birthday groups; and between the late and middle birthday groups of 1950. Quantity H was significant in both analyses. The null hypothesis of no significant difference in academic rank of students with late birthdays as compared with students with early and middle birthdays was rejected. The late birthdate students had a significantly lower class rank than either of the other two groups.

The difference between academic mean rank scores of students with 1950 late birthdays and students with 1949 late birthdays, who had not repeated a grade, was tested. The factor H was significant at the 5% level which led to the rejection of the null hypothesis. The students with 1949 late birthdays who had not repeated a grade had a significantly lower mean rank than the younger students with late birthdays in 1950.

Further study of class rank was conducted by determining the number and percentage of students from each of the groups in the upper one-fourth (Q_1) and the lowest one-fourth (Q_4). Chi square was used to test for the significance of difference in the number of students with early, middle and late birthdates whose scores placed them in the first or fourth quartile. There was no significant difference. The null hypothesis of no difference in the representation of students from the three groups was accepted.

The variable of teacher recognition was determined by election to membership in the National Honor Society. Seventy of the 507 students were elected to membership by the faculty. Chi square was used to test for significance of differences in membership in the honor society between the early, middle, and late birthdate groups of 1950. Chi square factor was not significant at the 5% level of confidence. The null hypothesis of no significant difference in teacher recognition of students with early, middle, and late birthdates was accepted.

Seventy-nine students were awarded social recognition by their peers. Chi square was used to test for significance of differences in social recognition of the early, middle, and late birthdate groups of 1950. The quantity of chi square was not significant at the 5% level of confidence.

The null hypothesis of no significant difference in social recognition of students with early, middle, and late birthdates was accepted.

Chi square was again used to test for the significance of differences in the attainment of the athletic recognition variable between the early, middle, and late birthdays of groups of 1950. There was no significant difference. Consequently, the null hypothesis of no significant difference in athletic recognition of students with early, middle and late birthdates was accepted.

Conclusions

There are some highly interesting and possibly significant observations which can be noted about these data. Some of these observations agree in many areas with the results reported in other research.

1. Academic rank recognition variable: The highest mean rank score of the seven groups was made by girls with early birthdays in 1950, not by the group who had 1949 birthdates and who entered school when they were approaching their seventh birthday. The lowest mean rank score of the seven groups was earned by girls with middle birthdates in 1949 who had repeated a grade. This differs from some research findings which indicate that boys usually are disadvantaged by a combination of chronological age and their sex.

The lowest mean rank score of boys was earned by the 1949 early birthday group, who were the oldest boys with birthdates in 1949 and 1950. These data suggest that the additional months of chronological age alone was not advantageous in relation to earning a higher class rank. The mean rank score for those students who transferred or dropped out after the beginning of the second semester of the 1967-1968 school year was lower than any mean score earned by any of the groups included in the study.

The statistically significant difference in the mean academic rank scores between the early, middle, and late birthdates in 1950 would indicate that chronological age is one important variable to be considered in setting school admissions policies. However, statistical analysis showed a significant difference in the mean class rank favoring the 1950 late birthday students when they were compared with their classmates, the 1949 late birthday students, who were born a year earlier and were "held out" and not allowed to start the first grade until they were approaching their seventh birthday. The fact that the group of students who were a full year younger than their classmates were able to academically surpass the older group by earning a statistically significant higher mean class rank strongly indicates that chronological age is not the only factor or the most important factor to consider in establishing school entrance age policies. This significant difference is particularly pertinent since these students with the higher mean class rank are the very students with late birthdates who would not now be permitted to enter the first grade, if their sixth birthday occurred after September 30, according to the present Tennessee state law.

Although the mean class rank of the late birthdays in 1950 was significantly lower than the early and middle birthdates in 1950, it is considered important to note that the two students who tied for first rank in the class of 507 had late 1950 birthdates and that seven of the top ten students in the class had late 1950 birthdates. Such data indicate the need for some criteria other than chronological age for school entrance, as approximately three-fourths of these students would have been prevented from entering school until a year later if the present law had been in effect at the time of their school entrance.

The number and percentage of students from each birthday group whose rank scores placed them in the upper and lower quartiles provided pertinent information. The 1950 late birthdate group had 37.88% of its girls in the upper fourth, and 17.19% of its boys in Q_1. These data suggest that the boys were disadvantaged by the combination of their sex and chronological age. However, the girls with 1950 late birthdates have almost ten percent more of their group in the upper fourth when compared with the 1950 middle birthdate girls, their older classmates, suggesting that a factor or factors other than chronological age were operating. The 1950 early birthdate girls have the largest percent, 48.28, in the top fourth of the class, suggesting that chronological age is an important variable to consider; however, the boys from the same early birthday group have the lowest percent in Q_1, tending to strengthen the position that chronological age is not the only factor involved in academic success. The large percentage of students with late birthdates in the upper fourth of their class, especially girls, reinforces the position that academically talented students can successfully compete and many times surpass their older classmates in academic achievement.

In examining the lowest fourth of the class, the data reveal that with two exceptions, the 1950 middle birthday girls and 1949 middle birthday girls who have repeated a grade, the boys have the largest percent in Q_4. These data tend to point out that the sex of the student is possibly one criterion to be considered in setting school admission policies. In contradiction, however, it is noted that the middle birthdate boys have the second lowest percentage in the lowest quartile as well as the second highest percentage in the highest quartile.

The lack of significant difference in the teacher recognition, social recognition, and athletic recognition variables reveal that chronological age has not been a disadvantage to the student with the late birthday. This evidence is contrary to one of the chief arguments used against early school admission that the child will be handicapped socially.

The data show that a total of 46 girls and 24 boys from all groups were elected to membership in the National Honor Society. The difference in the selection of boys and girls for this honor further supports the position that sex and not just chronological age is a factor involved in school achievement and teacher recognition.

Even though there were no statistically significant differences in the social recognition, the findings are that the 1950 late birthdate students gained more recognition as a group than did the early or middle birthdate students. This further indicates that the students with late birthdates were not at a disadvantage in gaining recognition from their peers. It is of interest to note that the girls had more recognitions in all groups than did the boys.

The results indicate no statistically significant difference in the athletic recognition variable for boys. However, 18% of those with 1949 birthdates, who had repeated a grade, had achieved athletic recognition as compared to 16.75% with 1950 birthdates. This implies that the older student has only a slight advantage in the achievement of the athletic recognition variable. Again the middle group of 1950 boys excelled, first in gaining academic recognition and then in gaining athletic recognition, contradicting the position that boys are handicapped by their sex.

Recommendations for Further Study

It is recommended that further study be done in the area of early school admission. Many factors other than the rigid chronological age requirement need consideration in planning school admission policies. The ungraded primary is an exciting new concept that shows potential benefit for all children, the slow learner as well as the gifted. Its objective is to insure that provisions are made to meet individual differences (5, p.41), and its emphasis allows each child to progress at his own level (1, p. 76).

Some procedure must be followed for admitting children to the first grade and a fixed entrance age policy at least has the virtue of being easily and impartially administered. Such a policy should be tempered with flexibility and informed professional judgment and augmented by a growing pool of information about the success of youngsters in the individual district (3, p. 26).

Some bright children do not seem ready for early school entrance. Decisions on acceleration should be made only after careful consideration of the student's physical, social, emotional and intellectual development. Education should meet the needs of all children and those children judged ready for early school entrance by a qualified staff should have the opportunity to develop their potential.

It is increasingly clear that our nation cannot afford to be wasteful of manpower in any form. More people of high ability are needed now than ever before. If bright children can be educated at earlier ages than is now the case, or if they can be carried to higher levels of proficiency without a general change in school leaving age, there are obvious and important gains in the size and quality of the work forces

of the nation at the most complex levels. Human time is irrecoverable and if an individual enters his profession later than necessary or with less training than he should have, there is obvious waste (4, p. 3).

The fact that parents are willing to pay for the first year of schooling for their children in order to avoid the necessity of their losing one year of school indicates the importance of the early school entrance problem. Only parents financially able to pay for the first year in a private school for their children can take advantage of the policy of allowing children to enter the second grade in public school when they did not meet the chronological age requirements for first grade entrance. Consequently, children from lower socio-economic levels are forced to wait regardless of their individual readiness or potential. It is commonly accepted that one of the greatest wastes of intellectual talent occurs in the lower economic classes. It is this group, also, which would need to enter employment as early as possible for financial reasons (6, p. 89). Worcester has estimated that if three percent of school children could save one year each by acceleration, our country would have gained for its use more than 1,000,000 years of its best brains in a single generation (4, p. 3).

Early admission of mentally advanced children to first grade is a very promising and exciting educational procedure and it is a constant challenge to find new ways to help every child develop his potential.

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