

THE EFFECTS OF EARLY ENTRANCE TO KINDERGARTEN  
ON READING ACHIEVEMENT

THESIS

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## Abstract

This study investigated the effects of kindergarten entrance age on reading achievement scores at the end of first and sixth grade. The subjects in this study were one hundred nineteen first grade students and ninety sixth grade students attending classes at the Albion Central School, a small rural district located in Western New York State.

Subjects were identified as either early or later kindergarten entrants. The Stanford Achievement Test (1982) was administered in May 1986 to measure subjects' total reading achievement.

A Chi-square test of independence was calculated for the categories of early and later kindergarten entrants. A separate Chi-square was calculated for the first and sixth grade samples.

Results indicated that there was a significant difference in the reading achievement test scores of early and later kindergarten entrants at the end of first grade. A smaller percentage than expected of early entrants was observed in the high achievement category. A greater percentage than expected of early entrants was observed in the low achievement category. However, in the sixth grade sample no significant difference was observed in the reading achievement of early and later kindergarten entrants.

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## Chapter I

### Statement of the Problem

#### Purpose of the Study

The purpose of this study was to define whether there was a significant difference in the reading achievement scores of early and later kindergarten entrants. The study examined reading achievement test scores of a first grade sample and sixth grade sample with regard to the kindergarten entrance age of the subjects.

#### Questions to be Answered

This study sought answers to the following questions:

Are there significant differences in the reading achievement test scores of early and later kindergarten entrants at the end of first grade when analyzed by reading achievement group?

Are there significant differences in the reading achievement test scores of early and later kindergarten entrants at the end of sixth grade when analyzed by reading achievement group?

#### Need for the Study

A great deal of diversity exists in the abilities and developmental readiness of a modern kindergarten population. The curriculum of instruction at this level has changed to a more rigorous academic orientation. Kindergarten students in many districts are

required to read simple words and sentences. In addition they are expected to solve addition and subtraction problems in mathematics.

One indicator of school readiness that has been analyzed is age at entrance to school. Langer, Kalk, and Searls (1984) have found consistent indications in the review of research that the academic achievement of early entrants is lower than that of standard age entrants. These findings have led school districts to utilize birthdate as a means of screening students readiness for school.

Findings by Bigelow (1934), as cited by Davis, Trimble and Vincent (1980), have suggested that children below six years of age will have a less successful experience in school. King (1955) contends that the younger children will be presented with challenges that are above their developmental readiness. Gredler (1978) as cited by Phye and Halderman (1980), agrees that the early entrant may have a lower developmental readiness. However, he believes that the early entrants' needs can be met through diagnosis and intervention.

In addition to academic achievement, rate of retention has been researched in previous studies. DiPasquale, Moule, and Flewelling (1980), Gredler (1980), and Langer et al. (1984) advise that retention may endanger the early entrants' self esteem and confidence.

Another area that was investigated by DiPasquale, Moule and Flewelling (1980) involved the rate of referral for psychological services. Findings indicated that there were a significantly greater number of early entrants referred for psychological services as compared with the number of standard age entrants referred.

The area of academic achievement seems to be the most widely studied in its relationship to school entrance age. Baer (1979), as cited by Davis et al. (1980), "found that older entrants scored significantly higher on achievement tests in reading, arithmetic and social studies" (p. 133). Green and Simmons, as cited by Davis et al. (1980), cautioned that older students would naturally score higher on achievement tests. A study by King (1955) also found a significant difference in achievement of early entrants as compared with later age entrants.

In an attempt to provide the kindergarten student with a positive initial school experience, research in school readiness has been expanded in recent years. The area of school entrance age and academic performance has been widely researched. A search for the relationship of age and academic performance in a rural public school may serve to reinforce the existing research.

#### Definitions

Early Entrant. A child who entered kindergarten with a maximum age of 5 years and one month.

Later Entrant. A child who entered kindergarten with a minimum age of five years and six months.

Reading Achievement Score. Total reading score as measured by the Stanford Achievement Test administered in May 1986.

High Reading Achievement. Stanines of 7, 8 or 9 on the total reading battery of the Stanford Achievement Test (1982).

Average Reading Achievement. Stanines of 4, 5 or 6 on the total reading battery of the Stanford Achievement Test (1982).

Low Reading Achievement. Stanines of 1, 2 or 3 on the total reading battery of the Stanford Achievement Test (1982).

#### Summary

Research on school entrance age and academic performance has demonstrated different findings. Entrance age has been linked to academic performance, retention rate, psychological referrals and overall school adjustment.

Further research may help to define the parameters of this problem. The answers to the questions proposed in this study may help support the existing research linking entrance age to academic performance (Langer, Kalk, & Searls, 1984). The need for appropriate pre-kindergarten screening may be made apparent by this study's findings.

## Chapter II

### Review of the Literature

#### Purpose of the Study

This study was designed to ascertain if there was a significant difference in the reading achievement scores of early and later kindergarten entrants.

A review of literature concerning this thesis addressed the topics of: a shift in curriculum, school entrance age, entrance age and academic achievement, psycho-social adjustment of early entrants, "retention: time to catch up," and "academic redshirting."

#### A Shift in Curriculum

In September a kindergarten classroom has a population which may range from four to six years of age. At this early stage, the curriculum and instructional methodology must be flexible to the extent that it will accommodate the wide range of developmental readiness inherent in this diverse population. It is understandable that an expansive range of individual difference exists with regard to academics, socialization, independence and maturity. This difference, most notable in September of the kindergarten year, is apparent in all heterogeneously grouped kindergarten classrooms.

Evolution of the kindergarten curriculum since the late 1950's has produced a more academically rigorous habitat for the public

schooled kindergarten. The tumultuous change in kindergartner schooling has been propelled in part by the "curriculum shove-down" associated with Sputnik from 1957 (Montz & Richardson, 1985). In addition the growth of day-care and other preschool programs created by two income and single parent families has led to more academically advanced children. In turn then, the level of parental expectation has increased substantially (Wolf & Kessler, 1987). Nall's observations, as cited by Wolf and Kessler (1987), indicate "that kindergarten programs have become more knowledge and skill oriented and have less play as a result of increased preschool experience" (p. 23). Movement away from the traditional play-to-learn curriculum towards a skills based, text oriented kindergarten is continuing today. "The 1980's may see more and more kindergartners poring over readers, workbooks and ditto sheets" (Mittenthal, 1982), p. C-1).

Professional opinion on the topic of learning with a cognitive focus is not completely favorable. "While some teachers support this shift in kindergarten curriculum, many fear that the urgency with which it is carried out may not be in the best interest of their charges" (Mittenthal, 1981, p. C-1). Educators supporting a developmental view of education suggest that the stressed cognitive focus of some early learning programs does not work and could be psychologically detrimental.

Changes in the beginning abilities of school children, as well as changes in the kindergarten curriculum have become prominent

since the 1950's. This has increased the urgency surrounding school entrance age, as well as muddling assessment of the relationship between entrance age and achievement.

### School Entrance Age

The question of when to enter children in formal schooling has been asked for many years. "Parents, teachers and educators have always been concerned about the physical, mental, social and emotional aspects that determine a child's readiness for entering first grade" (Langer, Kalk, & Searls, 1984, p. 72). Throughout the United States guidelines governing school admission age exist. As changes in the curriculum and the students' abilities have occurred, so too have changes in age admission guidelines.

It might be expected that a downward trend in the admission age statutes would be occurring. This would be commensurate with the more advanced academic achievement of the modern kindergarten entrant. However, Wolf and Kessler (1987) state, "Over the past three decades, the national trend has been to gradually raise the age of entrance to kindergarten and first grade" (p. 3). Furthermore, as a factor causing this anomaly, they state that "this trend is fueled by beliefs, opinions, and current practices rather than research findings" (Wolf & Kessler, 1987, p. 4).

The general principle governing school entrance is chronological age. Within New York State children may enter kindergarten as four year olds, if they become five years of age by December first of

that year. Additionally, they may enter first grade provided they are age six by December first. Some have argued that age (chronological) should not be the true consideration governing school admission. McGee and Hills (1978) suggest:

The issue has never been a particular age of entry but the right and responsibility of society, through the states to pick up where the family leaves off in caring for children. If public schooling or care is acceptable for five year olds, it is acceptable for three and four year olds as well. (p. 32)

Hedges (1978) concludes in his review of the research on entrance age:

The main finding of this entire document has been that earlier is not necessarily better. There is no rush. Childhood has value for itself . . . Children should not always be considered as in a race to walk first, talk first, and read first. (p. 9)

Although historically the question has been entrance age to kindergarten or first grade, contemporary trends in education call for the inclusion of all four year olds in public schools. The push to involve four year olds in a preschool program has already begun in a program currently being formulated in New York City. Success of remedial programs for low income preschoolers and current reports on the negative status of secondary education in the country, have increased the passion for mandatory preschools (Zigler, 1986). Zigler (1986) goes on to emphasize:

Those who argue in favor of universal preschool education ignore evidence which indicates that early schooling is inappropriate for many four year olds, and may even be harmful to their development. Marie Winn notes in 'Children Without Childhood' that

premature schooling can replace valuable playtime, to the injury of the child's development. (p. 12)

The concern is not simply a four year old attendance at a public school, but rather what will occupy his/her time there. Zigler (1986) suggests: "Our four year olds do have a place in school, but it is not at a school desk" (p. 14). Furthermore, he considers the schedule of the five year old child in the formal educational setting. He suggests one half day of kindergarten instruction followed by the availability of one half day of school day care (Zigler, 1986). These considerations are made with regard to the "present cognitive thrust in education where there is danger of overemphasizing formal and overly structured academics" (Zigler, 1986, p. 13).

A longitudinal study by Kinard and Reinherz (1986) examined the cognitive skills, aptitude and achievement, and school adjustment variables of 488 subjects according to their entrance age. Findings indicated a difference between the cognitive ability of the early and later entrance age groups. "The youngest age group having the lowest scores on information processing skills and the oldest age group having the highest scores" (Kinard & Reinherz, 1986, p. 371). Their results "suggest that the use of chronological age as the only eligibility criterion for school entry may result in some children being admitted to school who are not cognitively or emotionally ready" (Kinard & Reinherz, 1986, p. 371).

about the Kindergarten Program which can be used by the parents to better understand how their child would or would not fit into it. (p. 195)

Early entrance to first grade has also been based on mental age. A study by Birch (1954) charted the progress of forty-three mentally advanced children, as they entered first grade early. The age of the subjects in this study ranged from 5 years 3 months to 5 years 7 months. Identification as mentally advanced was based on several considerations. A psychologist analyzed each subject's social maturity, reading aptitude, height, weight, health, mental capacity and understanding of first grade expectations and population. Findings by Birch (1954) indicated that "early admission of mentally advanced children to first grade is a very promising educational procedure" (p. 87).

Miller (1957) has also advocated the screening of incoming early entrants and suggests that the "ready" early entrant can be successful academically and socially. Phye and Halderman (1980) agree with the evaluation of incoming early entrants as suggested by Gredler (1978). His position maintained that children should be accepted without regard to their birthday (Gredler, 1978). Considering all children, Gredler (1978) believed that "they should be allowed to enter school and once they are there, to develop worthwhile diagnostic and intervention programs for any who need help" (p. 31).

Simner (1983) reports that screening may systematically improve instruction for the early entrant. Furthermore, remedial programs

### Mental Age

Psychological testing has been utilized in some districts in order to identify early kindergarten entrants ready for formal schooling. Hobson (1948) outlines a program used in Brookline, Massachusetts during the 1930's and 1940's. This program involved the testing of children whose age at time of admission to school would be below four years and nine months. Admission was allowed on a trial basis if their mental age was five years or above. Research of their academic achievement indicated somewhat startling results. Hobson (1948) states:

The standardized test results shown in table 3 tell the same general story. The underage children admitted after physical and psychological examinations exceeded the older children, on the average, every year by margins varying from three months in Grade I to seven months in Grade VII. (p. 381)

Benedict, Gerardi and Coolidge (1983) contend that early entrance to kindergartens should be based on the reasonably accurate prediction of the child's success. They describe a multifaceted approach to early school admission. An integral portion of the procedure is testing by a school psychologist. The early entrance program is supported by another crucial step, kindergarten visitation, which is missing from other early entrance programs. The reasoning behind a visitation is stated by Benedict et al. (1983):

Classroom visitation is strongly encouraged for parents as a step in the early admission procedure. The purpose of visitation is to increase parental awareness of those factors which make for a successful experience in kindergarten. The visitation provides a parent an opportunity to gather relevant information

could facilitate early intervention for entrants as a result of developmental screening. However, Simmer's (1983) recommendations are not exclusive to early entrants. "Instead of raising the kindergarten entrance age to 60 months as proposed, a more appropriate strategy would be to screen all incoming children for school readiness regardless of the child's age" (p. 8).

Screening procedures for all new incoming students, as suggested by Gredler (1978) and Simmer (1983) are expensive for school districts to implement and maintain. Langer et al. (1984) are sensitive to the existence of budget restraints and suggest "reserving clinical screening for a small group of students seeking early entry" (p. 72).

Findings concerning bright children as early entrants are not conclusive. In a longitudinal study by Mahwhinney (1964) 33% of bright, early entrants were considered poorly adjusted, 75% were lacking leadership qualities and 25% were below average or had to repeat a grade.

A study of bright-mature early school entrants indicates results contrary to those of Birch (1954), Hobson (1948) and Miller (1957). Weiss' (1962) research matched early entrants to normal age children on the basis of IQ, sex and personality adjustment. Results from this study "indicated that the early age children performed lower on rating scale grades, personality scores and social status than the normal age children" (p. 53). In general, with regard to Weiss (1962), it may be stated that "if early age

children had entered kindergarten a year later, in the normal pattern, they would have achieved at a higher level" (p. 54).

Reading instruction for the early entrant raises concern about the appropriate mental age for beginning reading instruction. Gate's (1937) study indicates a mental age of 5.0 as sufficient for beginning reading instruction. However, it should be noted that depending on the method of instruction, mental ages of 6.0, 6.5 or 7.0 might be necessary for success. A case is made that successful reading instruction could occur at the early age of 5.0, but Gates (1937) states, "Although the data seem to indicate it is possible to teach children to learn to read at a mental age of 5.0 or higher, they do not imply that it is desirable to do so" (p. 508).

Developmental screening, psychological evaluation and readiness assessments may help to formulate indications of mental age. Wolf and Kessler (1987), caution that developmental screening tests and readiness assessments were "not designed to determine the readiness of a child for entry into a school program" (p. 25). Meisels (1985), as cited by Wolf and Kessler (1987), suggests that the results of the screening tests may be useless. These concerns about instruments and procedures raise questions regarding early entry based on mental age.

#### Entrance Age and Academic Achievement

Academic achievement is one major indicator of school success. Therefore in the analysis of early entrants' school success, much

research has been conducted in the area of achievement. Results from these studies appear inconclusive and sometimes contradictory. A representation of differing studies is given in this section.

Historically, the entrance age question has been asked concerning age at time of entrance to first grade. This occurred as many schools did not have kindergartens or regarded first grade as the beginning of formal instruction. A study of fourth graders by Bigelow (1934) investigated achievement with regard to first grade entrance age. This study placed subjects in groups according to their entrance age. Bigelow (1934) outlined several conclusions based on this research: later entrants to first grade, six years old to six years four months old, with IQ's of 110 or over were "practically certain to succeed in school" (p. 192). Also, early entrants, children with ages less than six years, would probably succeed if they had an IQ of 120 or more. Children aged less than six years and with IQ's of below 110 had a small chance of success in first grade (Bigelow, 1934).

In a study by King (1955) "the cumulative folders of 104 sixth grade students were collected. Specific information was gathered on IQ, attendance, performance on the SAT, referrals and teacher comments" (p. 333). "There was found to be a statistically significant difference in achievement of the two groups" (King, 1955, p. 335). Findings and conclusions of this study suggest that:

Younger entrants will have difficulty attaining up to a grade level in academic skills, and a large portion of them may fall far below grade level standards. Older

entrants are more likely to achieve up to and beyond grade level standards. (King, 1955, p. 336)

The findings of Carter's (1956) study of 100 subjects, half under age, half normal age entrants to first grade, had similar results to Bigelow (1934) and Kind (1955). "The chronologically older child appears to have the advantage in academic achievement over the younger child when given the same school experiences" (p. 102). This longitudinal study indicated that "the degree of scholastic achievement attained on the first achievement test tends to remain constant throughout the years of elementary schooling" (Carter, 1956, p. 102). Considered side by side, "87 percent of underage children do not equal the scholastic achievement of normal age children" (Carter, 1956, p. 103).

Baer's (1958) longitudinal study of 73 early entrants and 73 later entrants matched according to IQ and sex revealed that the later entrants' scores were significantly higher in reading achievement tests. As well, their overall subject grades were significantly higher than the underage children's. Also noted in this study was the average achievement of the early entrants. There were indications that the difference in early and later entrants diminishes in the upper grades. "Perhaps this is what should be expected since the advantage in mental age that the overage group carries in the elementary school grades tends to decrease as the students get older" (Baer, 1958, p. 19).

Findings by Hampleman (1959) indicated a relationship between entrance age and achievement scores. In the area of reading achievement later entrants had higher scores than early entrants. This tendency was not statistically significant. However, Hampleman (1959) suggests, "The differences in reading achievement although not statistically significant, are never the less interesting enough to merit further attention" (p. 334).

Carroll's (1963) study, based on age upon entrance to first grade, examined the achievement test performance of two matched groups of third graders. Subjects were matched according to their sex, IQ, and socioeconomic status. "The variable criterion for matching was age of entrance to first grade" (Carroll, 1963, p. 416). Findings by Carroll (1963) indicated a significant difference between overage and underage children's achievement test scores. "Overage children made consistently higher scores than their younger classmates" (Carroll, 1963, p. 416). A relationship between early entrance and reading achievement, as outlined by Hampleman (1959) was also observed in this study. "Grade placement scores for total reading show that more than twice as many children in the overage group made scores above 5.0 as in the younger group" (Carroll, 1963, p. 416). In conclusion, Carroll (1963) suggests that the underage children's achievement was hampered because their educational challenges were not developmentally appropriate.

Green and Simmons (1963), as cited by Davis, Trimble and Vincent (1980), found "that older entrants scored significantly higher on achievement tests; however, they cautioned that older entrants should know more at the beginning of their school training and that this fact explained the differences in test scores" (p. 133).

Halliwell and Stein (1964) examined the relationship of entrance age and later academic achievement in reading and non-reading related areas. Findings from this study indicated that "the older fourth grade pupils are significantly superior to the younger fourth grade pupils in the reading areas and in the reading related areas" (Halliwell & Stein, 1964, p. 637). Statistics in the fifth grade sample related a significant difference in the scores of early entrants and lower entrants in all categories "except that of arithmetic fundamentals" (Halliwell & Stein, 1964, p. 637).

Beatti (1970), as cited by Davis et al. (1980), ". . . reviewed twenty studies relating to age entrance into first grade and academic success. He concluded that age of entrance into first grade had a significant influence on achievement test scores" (p. 133).

A study by Davis, Trimble and Vincent (1980) utilized a large sample of test results in Kentucky. First, fourth and eighth grade achievement test scores were analyzed for relationships between age of entrance to school and academic achievement. Total score, math, reading and language scores were analyzed for significant differences in the group performance of 5 year old and 6 year old entrants to first grade. In both the first and fourth grade sample a significant

difference in the scores of early and later entrants was observed. The study reported that the trend ceased in the eighth grade results. The only significant relationship noted in the eighth grade sample was on the reading subtest scores. However, when the groups were compared with regard to sex, the significant difference disappeared. Davis et al. (1980) state that the difference was a "function of sex rather than age of entrants to first grade" (p. 138).

Elkind (1982) remarks that a relationship in high school early and later entrants' grades was observed in his research. "For boys in particular there was an advantage in terms of grades to entering kindergarten after age 5 rather than before" (Elkind, 1982, p. 42).

Langer, Kalk and Searls (1984) compared age of admission and academic achievement. In addition they identified a Caucasian and Black sample in their population. Therefore, analysis of the entrance age relationship was examined in two separate racial categories.

It was found that in the Caucasian sample, the relevance of entrance age was significant in the 9 and 13 year old group. In the 17 year old group, entrance age was no longer identified as a significant predictor of achievement (Langer et al., 1984).

The results obtained from the Black sample indicated that entrance age was a significant predictor of achievement in the 9 and 13 year old group. As with the Caucasian sample, age of entrance was not identified as a relevant predictor in the 17 year old group (Langer et al., 1984).

It was suggested by the researchers that in the Caucasian and Black samples, the elimination of entrance age as a significant predictor of achievement" appeared to be partially a function of high retention rates among young males" (Langer et al., 1984, p. 62).

Montz and Richardson (1985) observed a statistically significant difference in the achievement of early entrants as compared with later entrants. This difference was observed in the subjects' third grade achievement test scores.

A review of the research regarding pupil age upon school entry, prompted Uphoff and Gilmore (1986) to suggest that older children will be more likely to receive above average grades and score above average on standardized tests than will the younger school entrant. Additionally, the early entrant is more likely to fail a grade or be referred for a learning disability than will the older entrant (Uphoff & Gilmore, 1986).

Research on the entrance-age achievement question is not conclusive. Data collected by Dietz and Wilson (1985), Miller (1957) and Miller and Norris (1967) indicate an opposing viewpoint regarding early entrants as lower achievers.

Miller and Norris (1967) found that the significant difference in their early entrants' scores disappeared after first grade. They attributed this to individualization of reading instruction in the schools studied.

Hobson's (1948) results have been noted previously; the early entrants scored higher than later entrants. As well, Miller (1957) did not observe age as a significant predictor of achievement.

The study of 117 early and later kindergarten entrants by Dietz and Wilson (1985) failed to demonstrate a relationship between entrance age and later academic achievement. This study divided subjects into three categories according to entrance age: mean age 5 years 2 months, mean age 5 years 6 months, and mean age 5 years 11 months. Dietz and Wilson (1985) state: "No significant differences among the 3 age groups were found at kindergarten, second or fourth grade" (p. 93). Close examination reveals the limitations of their findings. "It should be noted, however, that the minimum-age for entry in other states is up to five months earlier than the age used in Iowa" (p. 94).

Results of entrance age and academic achievement studies are divided. Shepard and Smith (1986), as cited by Wolf and Kessler (1987) suggested that the achievement differences are minimal and that they occur within the low-ability category of the test sample. Also, they found that the achievement differential disappears upon completion of third grade.

#### Psycho-Social Adjustment of Early Entrants

In addition to areas of achievement and academic success, educators are concerned with the psychological and social adjustment of incoming students. This adjustment occurs each year with the

beginning of school in each grade. It may be said, that the greatest degree of adjustment to the educational setting occurs in the child's first year of formal schooling. As researchers have analyzed achievement of the early and later kindergarten entrants, so too have they monitored the psycho-social adjustment of the early and later entrants. Predictably, this monitoring has led to the inevitable comparison of the two entry age groups.

A survey of thirty-three school systems by Hamalainen (1952) indicated 16½% of subjects in the study entered kindergarten aged younger than four years and nine months. Further indication of the social and emotional effect of early kindergarten entrance is stated by Hamalainen (1952): "Twenty-four percent of children entering kindergarten under a September age of four years and nine months have had difficulty in adjusting to school as compared with six percent of the normal-age children who had difficulty" (p. 411).

A study by King (1955) included psychological referrals for consideration. In this study, "referrals to the psychologist were comprised of three subjects from the younger group and only one from the older group" (King, 1955, p. 336). King's (1955) research also provided information from cumulative folders containing classroom teacher's observations. Early entrants were noted to have marked differences between their records and later entrants' records. King (1955) states that:

Differences were noticeable in the number having (1) speech defects, (2) nervous indications and (3) personal and social maladjustments . . . Ten children in the younger group were described with such phrases as, emotional problems, facial tics, bites nails, cries often, asthma and unduly nervous, while similar remarks were made about only three of the older group. (p. 335-336)

In the study by King (1955) "undesireable growth characteristics were much more evident in the younger group" (p. 336). The findings of this study suggest that, "Younger entrants are likely to show more indications of poor personal and social adjustment in school" (King, 1985, p. 336). It was also noted in this study that the average attendance of the early entrant group was lower than that of the later entrants.

Weinstein's (1968-69) study also researched the question of school entrance age and psycho-social adjustment. The hypothesis for this study was, "that starting first grade among the youngest in one's class increases the probability of maladjustment during the school years" (Weinstein, 1968-69, p. 20). The results of Weinstein's (1968-69) research indicated that, "Children who start first grade young as compared to their classmates are more likely to be referred to a residential treatment center" (p. 27). Other indications detected by the study were that early first grade entrants, "were more likely to be seen as emotionally disturbed . . . fail a grade and/or be rejected by their peers" (Weinstein, 1968-69, p. 27).

A study by DiPasquale, Moule, and Flewelling (1980) considered the number of children referred for psychological services in grades

kindergarten through eighth grade. Its purpose was to ascertain if there was a significantly greater number of psychological referrals of early entrants as compared with standard age entrants.

DiPasquale et al. (1980) state:

The results of the present study clearly support the position held by Donofrio (1977). Since children born late in the year are significantly more likely to be referred by psychological services for academic problems in the primary grades than are children born early in the year, one can conclude that they are encountering more difficulties. The fact that this birthdate effect is not apparent in the later grades might be interpreted as evidence that younger children catch up to their peers or outgrow difficulties. (p. 237)

Gredler (1980) takes issue with results indicated in

DiPasquale et al. (1980). He proposes an additional factor influencing the percentage of early entrant psychological referrals.

An interesting argument is made for the effects of teacher' expectation. Gredler believes that the birthdate effect on performance is overstated. He attributes teacher expectation to the referral process:

One of the main difficulties the younger child meets in a North American school is the teacher's expectation that because he is younger and a male he automatically going to have difficulty in school. Teachers act on their beliefs--thus may send the younger ones to psychological services because they expect the child to have learning problems in a class frequently structured for the older child. (Gates, 1937, as cited by Gredler, 1980, p. 10)

Psycho-social adjustment is an important factor to consider concerning the entrance age question. It is logical to imagine that a swift, confident social and psychological adjustment to

school would increase the probability of academic success and the development of self esteem. Indications to the contrary amplify the concern over early entry to school.

#### Retention: "Time to Catch Up"

Retention is one form of remediation that is used to meet the needs of children below grade expectancy. The effects of early retention on children's self concepts may negate the positive academic review afforded the child by grade repetition. Parental interaction may also support or erode the effects of the retention process.

A pattern of greater rate of retention for early entrants has been reported by King (1955) and Langer et al. (1984). Teacher expectation may well have an impact on this pattern of higher retention rate among early entrants as suggested by DiPasquale et al. (1980).

King (1955) found that in the sample of 104 children, eleven children were retained. Only one later entrant had been retained whereas ten early entrants were retained. King (1955) goes on to conclude that "this finding indicates that chronological age at time of entrance to Grade 1 is of more significance for boys than girls" (p. 335).

A study by Langer et al. (1984) reported that in the 9 year old category, "the proportion of retained males increased significantly faster than females as the student's relative age

became younger" (p. 68). Furthermore, Kalk et al. (1981), as cited by Langer et al. (1984), concluded, "the youngest males in the young class age group had the highest risk of retention" (p. 68). This finding was illustrated in the Caucasian sample. Analysis of the Black sample did not reveal this trend (Langer et al., 1984).

Langer et al. (1984) also analyzed a 13 year old sample. Findings indicated that in the Caucasian sample, "a significant interaction between relative class age and sex . . . with the youngest males again at higher risk" (Langer et al., 1984).

Finally in the analysis of the 17 year old sample Langer et al. (1984) noted, "retention rates showed no significant changes in proportions for either sample, replicating the pattern found at age 13" (p. 72). It was suggested that dropping out of school influenced the retention rate (Langer et al., 1984).

Donofrio's (1977) article on retention describes children with July to December birthdates as "Fate's Unfavored Children" (p. 349). He goes on to state that "Despite a half century of research and compelling findings of the Gessell Institute, educators are apparently not convinced of the plight of children with a fall birthdate" (Donofrio, 1977, p. 29). Donofrio (1977) supports a September cut off date based on the Gessell Institute's findings.

Findings regarding retention rate among early entrants are inconclusive. A study by Sandoval (1984) analyzed the characteristics of 84 children retained in first grade. Sandoval

(1984) found they "were no different than their peers with respect to size, self-concept, IQ, social skills or age" (p. 461).

Early entrant retention rate was also examined by Peterson and Ayabe (1982). Developmental screening was used to identify school eligible early entrants. When retention data was examined a larger percentage of 5 to 5½ year olds were retained as compared to 4½ year olds. "Apparently 4½ year olds who pass the developmental readiness test can be as successful in kindergarten as older students" (Peterson & Ayabe, 1982, p. 14).

Findings by May and Welch (1984) yielded results contrary to those of Peterson and Ayabe (1982). Subjects that seemed immature on the Gesell Screening Test were retained as outlined by the Gesell Developmental Placement Program. Their scores in third grade on the Gesell Development Test, Third Grade New York PEP Tests in reading and Math, and Stanford Achievement Test indicated that they "had the lowest scores on all measures even though they were almost a year older than the other two groups of children at the time of PEP and SAT testing" (p. 381).

#### Academic Redshirting

Frick (1986) suggests "academic redshirting" (p. 9) or holding back children who are not ready to proceed to the next grade. Far from suggesting retention, Frick's (1986) recommendations outline a total reorganization of the primary grades. He cites the Campbell School's kindergarten as an example. Reading instruction

is divided into four steps. Students progress through the four steps according to their abilities. Frick (1986) continues "this system also allows for greater achievement and more rapid progress than is possible under the one-year, one-grade arrangement" (p. 10). In time each grade, kindergarten through third, will be subdivided according to the thirteen stages of the reading series. Students will move to the next stage upon mastery of the current stage.

A study by Gilmore (1984) of summer children that entered school and summer children that delayed school entry indicated higher achievement for the delayed entry group. Results from the Iowa Test of Basic Skills indicated that a higher percentage of delayed entry summer children were present in the below average achievement category (Gilmore, 1984).

Uphoff (1985) in a similar study found that early entry summer children had a higher average IQ than the delayed entry summer children and displayed higher average achievement scores as compared with the early entry summer children group (Uphoff, 1985).

Indications from the studies by Gilmore (1984) and Uphoff (1985) suggest a positive effect from delayed school entry for young children. Frick's (1986) study illustrates that proceeding after mastery at one's own developmental rate may be advantageous to all learners.

### Summary

This chapter reviewed some existing research on the topic of school entrance age. An abundance of conflicting results can be noted concerning this topic.

Many studies have indicated school entrance age as a predictor of academic success. Findings have resulted in the general premise that early entrants to school will achieve at a lower academic level when compared with later entrants.

However, conflicting research maintains that the differential in achievement of early and later school entrants is minimal, insignificant or nonexistent.

Differences in designs, procedures, definitions of age groups and subjects have contributed to the conflict surrounding school entrance age and academic achievement.

Indications that the psychosocial adjustment of early school entrants is problematic has also been suggested. Supporters of this viewpoint suggested early school entrants' poor psychosocial adjustment is created by immaturity and lack of school readiness. The opponents to this viewpoint suggest that poor psychosocial adjustment may be due to teacher expectation.

The rate of retention has been identified as higher in early school entrant populations. Other studies have not observed higher retention rate with regard to subjects' ages. Criteria for retention was not outlined in the research. The research

suggests developmental screening may lower retention rate for early school entrants. Research also suggested retention does not benefit the immature student.

"Academic redshirting" (Frick, 1986, p. 9) may assist developmentally immature students according to some research findings. Others suggest that the procedure of holding back students until mastery is achieved, is not beneficial.

Incongruencies in the findings of these studies heighten concern over early school admission and school success. Further research may focus on successful ways to deal with early school entrants.

## Chapter III

### Design of the Study

#### Purpose of the Study

This study examined a population of rural first and sixth graders. It defined their age at time of entrance to kindergarten and examined relationships in their reading achievement abilities.

#### Hypotheses

1. There is no significant relationship between the reading achievement scores of early kindergarten entrants as compared with later kindergarten entrants at the end of first grade instruction when analyzed by reading achievement group.

2. There is no significant relationship between the reading achievement scores of early kindergarten entrants as compared with later kindergarten entrants at the end of sixth grade when analyzed by reading achievement group.

#### Methodology

##### Subjects

The subjects in this study were 184 first grade students and 143 sixth grade students attending classes at the Albion Central School, a small rural district located in Western New York State.

The subjects in the study were identified as either early or later kindergarten entrants according to the following criteria.

Students who were five years and one month or younger upon entrance to kindergarten were placed in the early entrants category. Students with an age of five years six months or older were placed in the later entrant category. Students with ages of five years, two months through five years, five months were dropped from the study. This was done in order to create a defined boundary between the categories of early and later entrants. Subjects who had been retained were included in the study if they met the age limitations set forth in design of the study with regard to early and later entrants. The elimination of subjects reduced the sample to 119 first graders and 90 sixth graders. Therefore the total number of subjects in the study was 209.

#### Instruments

The Stanford Achievement Test Level One (first grade), Intermediate 2 (sixth grade) (1982), administered to measure subjects' total reading score, was based on 109 items from the subtests areas of word reading, reading comprehension and word study skills. This seventh edition of the Stanford Achievement Test was normed on a population of 250,000 students attending schools across the United States. "The Stanford Achievement Test is a series of comprehensive tests designed to measure the outcomes of learning at different levels in the educational setting" (Gardner, Rudman, Karlsen & Merwin, 1982, p. 2). This achievement

test in its varied levels assesses general educational objectives from kindergarten through the first year of college.

### Procedure

The collection of data began in May 1986. The researcher gathered information from permanent record cards for each homeroom in the first and sixth grade. Name, sex, birthdate and Stanford Reading Achievement scores were recorded. As well, information on retentions from previous grades was recorded.

The Stanford Achievement Test (1982) had been administered in homerooms in early May 1986. Collection of data began in late May when computerized scoring results were returned from the Niagara-Orleans BOCES to the researcher.

Results of the May 1986 Stanford Tests were recorded by the researcher. Scores were collected in the form of stanine, grade equivalents, and NCE.

Subjects were grouped according to their age upon entrance to school as either an early kindergarten entrant or a late kindergarten entrant. Their scores were recorded as low, average or high reading achievement. Reading achievement categories were defined by stanine: high reading achievement (stanines 7, 8, 9), average reading achievement (stanines 4, 5, 6), and low reading achievement (stanines 1, 2, 3).

### Statistical Design

A Chi-square test of independence was calculated for the categories of early entrants and later entrants. This was calculated for the first and sixth grade samples separately.

### Summary

One hundred nineteen first graders and ninety sixth graders were identified as early entrants or late entrants to kindergarten. Total reading score stanines of the Stanford Achievement Test were utilized in order to determine if a relationship existed between kindergarten entrance age and later reading achievement.

A Chi-square Test of Independence was utilized to define the existence of relationships between groups of early entrants, later entrants and their low, average or high reading achievement stanine scores.

## Chapter IV

### Statistical Analysis

#### Purpose of the Study

This study examined the reading achievement of first and sixth grade students who were identified as early or later entrants to kindergarten.

#### Findings and Interpretation of Data

A Chi-square Test of Independence was used to determine if there was a relationship between age upon entrance to kindergarten and reading achievement at the end of first grade. A second Chi-square Test was constructed to identify if there was a relationship between age upon entrance to kindergarten and reading achievement at the end of sixth grade.

The null hypothesis for the first grade sample was stated as follows:

There is no significant relationship between the reading achievement scores of early kindergarten entrants as compared with later kindergarten entrants at the end of first grade instruction when analyzed by reading achievement group.

The null hypothesis for the sixth grade sample was stated as follows:

There is no significant relationship between the reading achievement scores of early kindergarten entrants as compared with later kindergarten entrants at the end of sixth grade when analyzed by reading achievement group.

Total reading achievement test scores were separated into three categories: high reading achievement, average reading achievement and low reading achievement. The students' scores were recorded in the appropriate stanine category with regard to their definition as early or later entrant.

A contingency table was constructed for first graders with early and later kindergarten entrance age categories. The frequencies comprising Table One were used to compute a Chi-square test of independence for the first grade sample. A further examination of the data in the first grade sample was provided through the use of a probability table. Table Two provides definition of the degree to which each group influenced the outcome of the Chi-square test.

The tables that follow reflect the frequency and percentages of students falling into the distinct categories. The subjects were placed into categories according to their reading achievement and their kindergarten entrance age.

Table 1  
The First Graders' Reading Achievement Stanine  
by Kindergarten Entrance Age

Age Group	Reading Achievement			Row Margin
	C <sub>1</sub> - High (Stanines 7, 8, 9)	C <sub>2</sub> - Average (Stanines 4, 5, 6)	C <sub>3</sub> - Low (Stanines 1, 2, 3)	
R <sub>1</sub> Early Entrant	a 10  b 15.109	40  37.512	12  9.378	62
R <sub>2</sub> Later Entrant	19  13.890	32  34.487	6  8.621	57
Column Margin	29	72	18	119

a = observed frequency

b = expected frequency

$\chi^2 = 7.375$

d.f. = 2

Reject null hypothesis

Critical value = 5.99 (at 0.05 level)

Table 2

Observed and Expected Conditional Probabilities  
for the Crucial Row or Column

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1.	Pobs ( $R_1/C_1$ ) = $\frac{P(R_1 \text{ and } C_1)}{P(C_1)}$ = $\frac{0.084}{0.244}$ = .344 or 34%
	Pexp ( $R_1/C_1$ ) = $\frac{P(R_1 \text{ and } C_1)}{P(C_1)}$ = $\frac{0.127}{0.244}$ = 0.520 or 52%
2.	Pobs ( $R_2/C_1$ ) = $\frac{P(R_2 \text{ and } C_1)}{P(C_1)}$ = $\frac{0.160}{0.244}$ = 0.656 or 66%
	Pexp ( $R_2/C_1$ ) = $\frac{P(R_2 \text{ and } C_1)}{P(C_1)}$ = $\frac{0.117}{0.244}$ = 0.480 or 48%
3.	Pobs ( $R_1/C_3$ ) = $\frac{P(R_1 \text{ and } C_3)}{P(C_3)}$ = $\frac{0.101}{0.151}$ = 0.669 or 67%
	Pexp ( $R_1/C_3$ ) = $\frac{P(R_1 \text{ and } C_3)}{P(C_3)}$ = $\frac{0.079}{0.151}$ = 0.523 or 52%
4.	Pobs ( $R_2/C_3$ ) = $\frac{P(R_2 \text{ and } C_3)}{P(C_3)}$ = $\frac{0.050}{0.151}$ = 0.331 or 33%
	Pexp ( $R_2/C_3$ ) = $\frac{P(R_2 \text{ and } C_3)}{P(C_3)}$ = $\frac{0.072}{0.151}$ = 0.477 or 48%

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With analysis of the data in the first grade sample, Table One indicated that the null hypothesis must be rejected. Analysis of the data in Table Two assisted the researcher in identifying the major reason for rejecting the null hypothesis. In the category of high reading achievement the researcher expected to find 52% of early entrants and 48% of later entrants. Instead it was observed that only 34% of the early entrants fell into the high reading achievement category. Furthermore, a greater percentage than expected of later entrants fell into the high reading achievement category. With 66% of the later entrants occupying the high achievement category, the observed frequency was significantly different than the expected frequency.

In the area of low reading achievement it was expected that 52% of the students in this column would be early entrants. However, it was observed that 67% of the students in the low reading achievement group were early kindergarten entrants. The researcher expected to find 48% of this column's total to be later entrants but instead only 33% were defined as later entrants.

The findings in the first grade sample indicated that there were fewer early entrants in the high reading achievement category than were expected. There was a greater number of later entrants in the high achievement category than were expected. The data collected from the first grade sample indicate a relationship between age of entrance and reading achievement at the end of first

grade. The group of early entrants displayed lower reading achievement as compared with the later entrants.

A contingency table was constructed for the sixth graders with early and later kindergarten entrance age categories. The frequencies comprising Table Three were used to compute a Chi-square test of independence for the sixth grade sample.

Table three reflects the frequency of students falling into the distinct categories. The subjects were placed into categories according to their reading achievement and their kindergarten entrance age.

The results included in Table 3, the sixth grade sample, indicated that the expected distribution of early and later entrants did not vary significantly in their observed and expected frequencies. Therefore, the null hypothesis was not rejected. There is no significant relationship between the high, average and low reading achievement ability of the sixth grade students and their age upon entrance to kindergarten.

**Table 3**  
**The Sixth Graders' Reading Achievement Stanine**  
**by Kindergarten Entrance Age**

Age Group	Reading Achievement			Row Margin
	C <sub>1</sub> - High (Stanines 7, 8, 9)	C <sub>2</sub> - Average (Stanines 4, 5, 6)	C <sub>3</sub> - Low (Stanines 1, 2, 3)	
R <sub>1</sub> Early Entrant	a 10  b 11.733	32  29.867	6  6.400	48
R <sub>2</sub> Later Entrant	12  10.267	24  26.133	6  5.6	42
Column Margin	22	56	12	90

a = observed frequency

Critical value = 5.99 (at 0.05 level)

b = expected frequency

$\chi^2 = 1.191$

d.f. = 2

Null hypothesis not rejected

### Summary

The first grade sample results indicated a significant relationship between kindergarten entrance age and later reading achievement at the .05 level. The largest influence was displayed in the category of high reading achievement. In addition, the low achievement category influenced the Chi-square test of independence to a smaller degree. These anomalies were calculated to be statistically significant thus causing rejection of the null hypothesis in the first grade sample. It should be noted that consideration of the data at the .02 level would not have resulted in a significant relationship.

The sixth grade sample results were not found to be statistically significant at the .05 level. There was no statistical difference in the observed and expected frequencies of the sixth grade sample. As a result, the null hypothesis was not rejected. Apparently, the relationship between entrance age and reading achievement diminishes as children's chronological age increases.

## Chapter V

### Conclusions and Implications

#### Purpose of the Study

This study proposed to examine the relationship between age at entrance to kindergarten and later reading achievement. The researcher analyzed reading achievement test scores of a first and sixth grade sample. Subjects were considered with regard to their age at entrance to kindergarten and their reading achievement group.

#### Conclusions

The sample groups of first and sixth graders were considered separately in this study. Each subject was identified as an early or later entrant to kindergarten. Their SAT total reading achievement score was then recorded. A Chi-square test of independence was calculated for the first grade and sixth grade group.

Analysis of the data obtained from the first grade sample indicated a significant relationship between entrance age and later reading achievement. A percentage lower than expected of early entrants placed in the high reading achievement category. In addition, a percentage greater than expected of early entrants fell into the low reading achievement category. Later entrants were observed at a percentage higher than expected in the high reading

achievement category. In the low reading achievement category a lower than expected percentage of later entrants were observed. Therefore, indications are that children defined as early entrants to kindergarten may score lower in total reading achievement than expected.

In this study the relationship was significant at the .05 level of confidence. Had the results been analyzed at the .02 level of confidence, a significant relationship would not have been noted. Therefore, although a significant relationship exists, it is not overwhelming.

The fact that some early kindergarten entrants were observed in the high achievement category warrants consideration. How were these children able to achieve with such efficiency while other early entrants could not attain even an average reading achievement score?

The high achievement early entrants' success may be attributed to several factors. They may have attended a day care facility or nursery school. Perhaps their parents maintained learning readiness as a high priority. Parents and siblings may have enriched the high achieving early entrants' environment with developmental play, books, conversation, social experience with peers, drawing, coloring and early writing experiences. The presence of an older sibling in the home environment may have provided the early entrant with a greater degree of school readiness.

These factors may have fueled the self esteem and curiosity of the early entrant, creating an interest in learning.

Conversely, what explanation can be given for the low achieving early entrant? Perhaps the presence of the early entrant in the low reading achievement category can be explained by the general lack of maturity in the early entrant population. The parents may have pushed their child into school before he/she was ready. In some instances the low socioeconomic status of the family may have influenced the early entrant negatively. The early entrant may have achieved in the low category because of a lack of enrichment at home. The absence of books, developmental play, social experience with peers, conversation, drawing, coloring and early writing experiences may have hampered the success of some early entrants. Low reading achievement in the early entrant category may be attributed in part to the absence of an older sibling.

Results from the sixth grade sample did not display identical indications. A significant relationship between entrance age and sixth grade reading achievement was not observed. Therefore, the null hypothesis was retained for the sixth grade sample.

Perhaps a significant relationship was not observed in the sixth grade sample because the variation in early and later kindergarten entrant's abilities decreases as age increases.

### Implications for Research

The question of entrance age and school success has received much attention historically. Further research in this area can be recommended on the basis of conflicts in existing research. Detailed research of this problem might assist in the development of instructional programs that provide all students with a successful primary school experience.

A study consisting of a greater number of subjects would allow for analysis of male and female early entrants. This would define if early entrance to school is detrimental to both male and female school success.

Teacher expectation may be influenced by age at entrance to school. A study of the achievement of early and later entrants whose birthdates were not known by the teacher might define the influence of teacher expectation on success of early entrants.

A study could investigate relationships between early entrant achievement and sibling age. This might indicate the effects of modelled school behavior on preschool children.

Further research could include investigation of the effect of socioeconomic status on the achievement of early entrants. This could support the existence and development of preschool programs for underprivileged children.

Transition classes for early entrants may provide them with time to grow socially and developmentally. Research as to the

effect of transition classes on early entrants' social, emotional, and academic growth would help determine if such programs are viable and for which population.

A longitudinal study of a early and later entrant group could investigate the long term effects of early entrance to school. Factors such as retention, achievement, adjustment, social growth, IQ and dropout rate could be investigated. Additionally, the entrance age and achievement relationship could be analyzed as to when it becomes an insignificant factor in school success.

Research in these varied areas could assist educators in finding effective ways to help all learners. Results from these studies could clear some of the controversy surrounding school entry age and retention criteria. Knowledge of the ramifications of teacher expectation could help develop more effective instruction.

#### Implications for the Classroom

The findings of this study provide some data relevant to the admission of young children to a formal instructional program, kindergarten. However, radical changes in admission policies and instructional placement should not be made on the basis of this researcher's findings. The relationship between kindergarten entrance age and academic achievement, although significant, was not monumental in this study.

A child's birthdate should not be considered as the determining factor in school admission. The use of a carefully selected

screening instrument may help to identify children's developmental levels. This information can be used by instructors in order to provide the student with a successful first year in formal schooling. The use of developmental placement may or may not be warranted in some educational settings.

The presentation of curricular material through varied learning experiences should help assure success for all learners. In addition, teaching to children's strengths could quicken mastery of the early school curriculum.

Retention should be used cautiously. A retention scale administered mid-year may help eliminate poor retention candidates. Parents should be well informed of retention procedures. They should also be apprised of the students' attitudes generated by parental reactions to retention.

Teacher expectation of early entrants should be seriously considered. Considering children individually, with special remedial instruction, could help early entrants experience success.

Self esteem should be formally developed in all students. Special emphasis on self esteem of early entrants may improve their chances of success.

Finally, it is suggested by this researcher that local districts consider their admission procedures and student success individually. A study of early entrant success at the local level may support current admission and instructional procedures, or it may help to isolate problems with admission procedures and instructional programs.

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