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ABSTRACT

The practice of delaying students' entrance into kindergarten raises several questions. This literature review asks: (1) How does the entrance age of kindergarten children affect academic achievement?; (2) Do age-eligible older students perform better academically than younger students?; (3) Do year-older or "red-shirted" students have an academic advantage over younger students?; and (4) Do transitional programs such as pre-kindergarten and pre-first or junior first grade promote achievement for immature, high-risk students? After defining relevant terms, the review explores the history of entrance age issues; describes the major issues, controversies, programs, and contributors; and provides a synthesis and analysis. The review concludes that despite often contradictory research findings, school age does not affect academic achievement. The review recommends that more efforts be made to design kindergarten classes that are developmentally appropriate for all enrolled students. Contains 24 references. (EV)

Kindergarten Entrance Age and Academic Achievement

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KINDERGARTEN ENTRANCE AGE AND ACADEMIC ACHIEVEMENT

Kindergarten marks the beginning of formal education for children about the age of five. Differences are apparent from the moment children step into the classroom. Some are happy and eager to learn, some are apprehensive and fearful, and a few are traumatized by the experience of being separated from parents for the first time. More differences become apparent when children engage in fine motor activities, sit on the carpet to listen to stories, and are exposed to the challenge of the more academic kindergarten curriculum during the school year. Would some of these differences diminish if some of the younger children delayed their entry to kindergarten? Does an older child have a greater advantage to succeed academically? At what age are most children ready to enter kindergarten and succeed academically? Answers to these questions have been of concern to parents, educators, and researchers for they impact an increasing number of children who enroll in kindergarten.

In 1992, 48 states offered publicly funded programs for all 5-year old children. To ensure attendance in school there has been an increase in the number of states that mandate compulsory attendance for 5-year olds (Robinson & Lyon, 1994). According to the National Household Education Survey (1995), kindergarten is experienced by 98% of children entering first grade.

Children entering kindergarten reflect the increasingly diverse population at large. They come from a variety of racial and cultural backgrounds, socio-economic levels, language backgrounds, family types, and parent-education levels. They also differ in the types of preschool experiences they have had. The Census Bureau in 1990 reported an increase in the number of children who attended preschool. Approximately 59.2% of all young children have attended preschools. However, publicly funded programs for 3 and 4-year olds have not increased significantly since the early 1970's with only three states providing programs for at least 20% of their 4-year olds (Robinson & Lyon, 1994). Despite the wide diversity of their social, economic, and educational experiences, they will share one unifying requirement that will permit their entry to kindergarten.

Eligibility to enter kindergarten is usually based on a single criterion--age. During the last three decades, school age set the cut-off dates have moved from the beginning of the *calendar* year to the beginning of the *school* year. Depending on the entrance age established by the state or school district, some children who enter kindergarten will be older or younger than their classmates.

Within the last decade, Bracey (1989) as cited by Quinlan (1996) and other researchers have reported on a trend occurring with higher frequency in affluent communities, for parents to keep eligible age children out of kindergarten for a year. He called it the "graying of the kindergarten". In studies by Cameron and Wilson (1989) children were "red-shirted" (delayed kindergarten entrance) in hopes of giving them an academic advantage and possibly an athletic advantage in middle or high school. Meanwhile, working mothers, low income families, and working single parents without access to free preschools have enrolled their children in the public school system as soon as they are age eligible without regard to whether they will be younger or older in their classes.

Younger students may be children surviving premature births whose birth dates make them eligible as much as three months early. The result is a widening range of ages, early childhood education, and abilities (Robinson & Weimer, 1990).

Educators are being challenged to provide for the wide diversity of the entering kindergarten population by addressing individual developmental differences through a developmentally appropriate curriculum.

Statement of Problem

The curriculum in kindergarten has undergone a change from what it was two decades ago. There has been an escalation of academic demand in kindergarten and first grade (Shepard & Smith, 1988). In a survey by the Educational Research Service in 1986, 18% of principals reported that it was a district policy to teach reading to all kindergartners; an additional 50% of schools taught reading to those who were "ready and able"; 85% of the principals say that academic achievement in kindergarten had medium or high priority in their schools (Shepard & Smith, 1988). High academic expectations from both younger and older or "red-shirted" students have raised several questions which will be the focus of this paper.

1. How does the entrance age of kindergarten children affect academic achievement?
2. Do age-eligible older students perform better academically than younger students?
3 Do year-older or "red-shirted" students have an academic advantage over younger students?
4. Do transitional programs such as pre-kindergarten and prefirst or junior first grade promote achievement for immature, high risk students?

Definitions

School entrance age is a chronological age, usually five, based on a birthdate deadline system. Within the past 20 years, there has been a steady increase in educational opportunities for 5-year olds. In 1974 only 13 states offered publicly funded kindergarten, while eight states served less than 50% of the eligible children. In 1992, 48 states offered publicly funded programs for all five-year olds. Only New Hampshire did not provide kindergarten for all of its children. However, it represented an increase of 55% students served in 1992 from only 33% in 1986 (Robinson & Lyon, 1994).

A *cut-off date* is a deadline date that required students to meet the age requirement set forth by the school district. It lacks uniformity from state to state or from district to district. According to a 1992 survey, these deadlines ranged from June 1 (of the year of entrance) to December 31. There were 17 different dates reported, but even more variation existed because some states permitted local options to establish their own deadlines. The most popular date was September 1 which was selected by 17 states. None of the other 16 dates was selected by more than four states, and 10 states selected dates that were selected by no other Robinson & Lyon (1994). For example, in California students must be five by December 2 to enter kindergarten.

The *younger student* is a relative term used to describe the younger aged child in relation to other members in his cohort or class, often having a birth date just before the cut off date.

The *"summer children"* or *"summer fives"* describe a group of children born during June, July, August, and September in a study by Crosser (1991). Using September 30 as a cut-off date the youngest child could have been born September 30 and the oldest child, May 31 of the previous year resulting in an age range of 16-months rather than a typical 12-month range. The 4-month difference would be represent a significant period of the life of a young child. Children with birthdates during the summer months would comprise the younger aged group.

An *older student* is a relative term used to describe the older-aged child in relation to the other members in his cohort or class, often having a birthday soon after the cut-off date.

Delayed entry refers to the practice of holding back from kindergarten entry, a child who is age-eligible to enter school.

"*Redshirt*" is a term used to describe the process of delaying kindergarten entrance for age-eligible children whose birth date makes them "young" for their class in hopes of giving them an academic advantage (Magliscano, 1994)

"*Graying of the kindergarten*" is a term used to reflect the change in the age composition of kindergarten classes when age eligible students are held back by affluent families, as described in Bracey's study (Crosser, 1991)

A *screening process* assesses the development of children prior to school entry through procedures administered or obtained by school districts. Procedures may include the use of screening instruments, the attainment of medical information and parent questionnaires, and the screening of vision, hearing, speech, and motor development.

Developmentally appropriate instruction is based on a concept related to both predictable sequences of growth and change that occur in children during the first nine years of life in all domains of development – physical, emotional, social, and cognitive and to the individual patterns of growth, as well as individual personality, learning style, and family background. The guidelines provide a framework for instruction and emphasize active learning by children through interaction with materials, peers, and adults. In contrast, *developmentally inappropriate* instruction focuses on primarily the cognitive area with emphasis on skill development taught in isolation with the whole group, teacher-directed instruction, paper and pencil activities, etc. (Bredekamp, 1987).

Developmental screening is an assessment of children's abilities to acquire skills, not an assessment of the skills that children have acquired. It is used as a first step in identifying children who may be in need of further assessment (Bredekamp, 1987)

Readiness is a term associated with early childhood education. Its use is not standardized. The concept is often used to describe how prepared children are to begin formal schooling, reading instruction, math instruction, or move on to the next grade. The readiness concept utilizes assessment to determine whether or not children are ready for a particular experience (Parks, 1996).

A *readiness test* is an assessment of skills that children have acquired so that teachers can plan appropriate instruction (NAEYC, 1989). The Gesell School Readiness Test (GSRT) devised by the Gesell Institute of Human Development is one instrument that is used to determine readiness for school entry. Assessing school readiness has raised several concerns. The assessment during a brief single testing session may be incomplete and inaccurate, the reliability and predictive utility are questionable due to the inconsistent skill development in young children according to Shepard (1991) as cited in Porwancher & De Lisi (1992), and the fact that the tests are administered several months prior to school entry. In a study by Banerji (1991) the GSRT was found to be more suitable for screening rather than as a placement tool for extra-year programs.

An *achievement test* is a measurement of what children have learned or the skills that have been acquired from instruction (NAEYC, 1989). In examining achievement the focus of this paper will be primarily on reading and/or math scores.

An *intelligence test* is a standardized test which purport to measure children's intellectual capacities as compared to established age norms (NAEYC, 1989)

Retention, as used in this paper, applies to the practice of adding a year of schooling by repeating a grade. According to a study of kindergarten teachers by Bergin, Osburn, and Cryan (1996) teachers were more likely to recommend retention for children who were described as "dependent and somewhat immature" when asked to look at factors other than achievement or competence. Older teachers were more likely to recommend retention.

Extra year program or *transitional* program adds an additional year of schooling either prior to or following regular kindergarten, for children deemed to be "unready", "immature", "young", etc. Programs prior to kindergarten may be called junior kindergarten, developmental kindergarten, or pre-kindergarten. Programs prior to first grade may be called junior first grade or pre-first grade (NAEYC, 1989). Programs such as these were created to delay entry to kindergarten or first grade for children who appear to be at risk for difficulties. They seemed to address maturation, not education as evidenced by the fact that children were rarely tested to determine their progress. Once a child had been in a developmental placement, he or she was automatically promoted. The child was less likely to be retained later, regardless of classroom performance (Shepard & Smith, 1986). Transitional programs are sometimes perceived by some researchers to be a form of retention.

History

Age restrictions were not instituted in the early private and independent kindergarten programs. The school laws of most states did not permit the expenditure of public school funds for the education of children of kindergarten age. Kindergarten classes were philanthropic in nature, supported by the church and endowed by individuals and associations. Consequently a broader age group was welcomed, and children between three and seven years were admitted. Prior to the civil war, it was common practice for children as young as three years old to be sent off to school with their older siblings (Weber, 1969).

However, the decade between 1890 to 1900 found support for the establishment of public kindergartens. In general, "any city, through powers inherent in its charter, may maintain kindergartens provided they are supported wholly by local taxation." The designation of the legal age of entrance, or the omission of entrance age provided for the establishment of kindergartens. For example, a school age of five allowed for the children of kindergarten age to be educated at public expense. In states where no age limit existed, there were no obstacles for establishing kindergarten. However, in states where the school age was six or more, a problem existed. Although six-year olds could benefit from a kindergarten program, it was primarily intended for younger children. In these instances, legislation specified that children below the legal age were permitted with the establishment of kindergartens only (Vandewalker, 1908). As kindergarten became a part of the public school system, age-range restrictions were applied. Acceptance of children a year or two years younger than first grade found many four-year olds entering kindergarten. When enrollment swelled, five year olds were given preference (Weber, 1969).

School entrance age was once a non-controversial subject. The best way to enter school was to become five years of age by a designated cut-off date set by the school district. Regardless of the maturational level, previous experience, socio-economic background, etc. a child was accepted into kindergarten. The responsibility of the teacher was to provide a curriculum that met the needs of the child (Parks, 1996).

Establishing school entrance became the responsibility of state legislators, but issues like research findings, reading readiness, etc. have influenced decisions for establishing the age. When kindergarten became a part of the public school system, teachers could no longer base their curriculum solely on the developmental needs and interests of children. The kindergarten experience now needed to provide some continuity to the first grade program. William S. Gray (1927) an authority on teaching of reading, insisted that kindergarten should share in the responsibility of first grade in preparing children to read (as cited by Weber, 1969). It was suggested that kindergarten should be a readiness program for first grade.

During the period between the twenties and the sixties two very strong positions developed. Depending on whom defined "reading readiness", its implications produced divergent views on the curriculum for kindergarten. One group emphasized the word

experience and interpreted reading readiness as the result of rich concrete experiences that prepared children for reading. Another group emphasized the word *reading* and interpreted reading to the skills of the formal reading process such as hearing differences in sounds, applying the left to right and top to bottom progression in reading, seeing likeness and differences in form, etc. Many kindergarten specialists supported the concept of experiential readiness and opposed the introduction of the formal ways of building readiness with paper and pencil exercises (Weber, 1969). During this period in 1958 the legal age for school entrance was 4 year 9 months (Parks, 1996).

Concern with the reading readiness brought up questions about maturation and the optimum time for learning to read. According to Weber (1969), it was the belief at the time that a mental age of six-and-a-half was necessary before a child could benefit from reading instruction. Moore (1977) as cited in Boyd (1989) in his book Better Late than Early spoke out against early schooling and concluded that the normal child is not ready for school until he reaches his integrated maturity level which is not before eight years old. Elkind (1981) in his book The Hurried Child warned that children who lack the maturity to deal with the structure and academics of the classroom can experience undue stress and possible long term poor-concept, burn-out, and drop-out.

According to Elkind (1986) advanced technology and the changing life styles of the American families occurred in the 1970's and 1980's. Women in the job market and high divorce rates resulting in single mothers raising children, have resulted in increased preschool enrollment, full day kindergarten programs and early entrance age to school. The introduction of Sesame Street, accountability for academic achievement in later grades, and parent expectations were all factors in influencing the change in the curriculum of kindergarten (Shepard & Smith, 1988). Responding to the demands of the public, administrators, and legislators, educators have provided a more rigorous academic program by shifting the curriculum downward. Curriculum for kindergarten often includes what was previously taught in first grade, including reading. An added change is the challenge to teach children from diverse family backgrounds, socio-economic and educational levels, languages, etc. as increasing number of states have established mandatory attendance for five-year olds.

Robinson and Lyon (1994, p. 776) stated that "one of the most striking changes related to young children in the past 20 years has been the increase in the number of states requiring five-year olds to attend school." Contrary to popular belief that six is the age of compulsory attendance, age seven was selected as the age of compulsory school attendance by the 21 states in a 1992 survey. Age six was the compulsory age in 17 states, and Pennsylvania did not require entrance until age eight. By 1992, ten states had mandated enrollment at age five: Arkansas, Delaware, Florida, Maryland, Mississippi, New Mexico, North Carolina, Oklahoma, South Carolina, and Tennessee.

Although school entrance age has remained at five years old, cut-off dates have shifted from February 1, established thirty years ago, to September 1 to ensure the enrollment of "older children" (Parks, 1996). Some middle and upper middle class parents responded to the more academic program by "red-shirting" their age-eligible "younger children" by

delaying entry to school for a year in hopes of giving them a competitive advantage. This action has resulted in an even wider age range in kindergarten classes, forcing researchers and educators to examine the effects of age on achievement (Parks, 1996).

Major Issues, Controversies, Programs, and Contributors

There were many issues that deal with determining the optimum entry age of kindergarten children and its effect on achievement. Research was abundant but the results were ambiguous. Some studies revealed academic advantages for older students and, others reported no differences in academic performance for the younger or older student. It is no wonder that administrators and educators are confused in counseling parents on the optimum entry for their children. According to Bracey (1989) as cited in Quinlan (1996) many educators and parents, influenced by results of earlier researchers, tended to support delayed entry for the younger age-eligible child resulting in the "graying of the kindergarten" (Quinlan, 1996). In reviewing the results of some current research there continues to be a lack of consensus. The design of the research has been examined to account for differences.

Crosser (1991) evaluated research studies on the basis of their research design characteristics. She selected three studies by Green and Simmons (1962), Reinherz and Kinard (1986), and Sweetland and DeSimone (1987) that met the following evaluative criteria:

1. Statistical significance set at least at the .05 alpha level.
2. Academic achievement was based on objective measures such as standardized achievement test scores and not subjective measures such as letter grades, teacher rankings, etc.
3. There was a large enough sample size to support the findings.
4. Subjects were limited to children who were continuously enrolled in the same school district in a regular classroom setting. Special education and retained children should not be included.
5. There were controls for ability and gender.

Crosser (1991) found that these studies were the only ones that did control for intelligence which she felt was "absolutely vital" for any comparisons of achievement. Green and Simmons (1962) examined the performance of children who entered first grade before they were six years of age to students who were already six year years or older when they entered first grade. They found that the older students outperformed the average achievement of the younger students. However, generalizations could not be made because the younger group included under-aged kindergarten entrants. Reinhertz and Kinard (1986) tested 467 fourth graders who entered kindergarten given a December 31 cut-off date. The youngest group performed more poorly in relation to their older classmates, but not in relation to national norms. Sweetland and DeSimone (1987) analyzed the achievement of students in the sixth grade and found no significant differences in achievement between the older and younger group. Although these studies fulfilled the criteria set by Crosser, none of these studies dealt with "summer children" specifically.

Crosser (1991) was interested in studying the academic achievement of "summer children" who entered kindergarten at the age of five and those who entered at age six, assuming a cut-off date of September 30. Official school records of seventh, eighth, or ninth grade students were drawn from seven public school districts in northwestern Ohio. From a pool of 253 potential subjects who had been in continuous enrollment in regular classrooms since kindergarten she found 190 students who had enrolled in kindergarten at age 5 and 63 enrolled at age 6. The scores of the Test of Cognitive Skills and the Cognitive Abilities Test administered during the fifth and sixth grades "provided the vehicles for matching same-gender subjects for intelligence." Pairings were restricted to those who had taken the same tests. She concluded that "summer five" boys, matched for intelligence, who were "redshirted" tended to be advantaged academically, especially in reading. "Redshirted" girls, did not show any academic advantage, but performed generally better on composite battery scores on standardized tests. Research conducted by the Ohio State Department of Education in Columbus also were concerned about younger "summer children" in a longitudinal study of 27 selected districts. They showed lower standardized test performance through the first grade and found that 25 percent of all "summer children" received Chapter 1.

The research by Foote (1991) concurred with the findings of Crosser (1991) in favoring the older student academically. The post-test only study randomly selected 40 minority students who were divided into two groups, a younger and older group. The students lived in a low socio-economic neighborhood in the Amos Alonzo Stagg Public School on the south side of Chicago. The findings indicated that the older group performed significantly higher scores on the Developmental Test of Visual-Motor Integration administered in the spring of the kindergarten year. Similar findings were found by Parks (1995). Thirty minority kindergarten students were randomly selected from a parochial school in a predominantly low socioeconomic neighborhood in Chicago, Illinois. The prereading composite score from the Metropolitan Readiness Test given in the spring of the kindergarten year was used to measure achievement. However, measuring academic advantage at the end of kindergarten has been challenged. According to researchers Shepard and Smith (1985) initial gains in achievement diminished or disappeared by third grade. Miller & Norris (1967) found academic advantage disappeared at grade 8 and Davis (1980) noted no difference when students were 17 years of age (as cited in DeMeis & Stearns, 1992).

Cameron and Wilson (1989) found "statistically significant but relatively *small* differences" based on the reading and math scores on the Iowa Tests of Basic Skills administered in the second and fourth grade. Cameron and Wilson (1989) found the "redshirts" in their study did not gain any advantages as a result of their delayed entry. They concluded that delaying school entry by age-eligible children was not advisable. The sample for this research was drawn from 313 students, of which 191 were selected and divided into four age groups. Group 1 was called "redshirts" (met cut-off date September 15 a year prior to their enrollment), group 2 was called September (birthdates from September to January), and the other groups were called January and May to represent the midpoint of four month birth dates intervals. To control for differences in

ability among the groups, the Cognitive Abilities Test administered in first grade was used as a covariate.

The research of Quinlan (1996) on 119 students from the public school district in Hillside, New Jersey also found a low correlation between the entry age and the overall reading ability by the end of third grade based on national percentile rank composite reading score on the Metropolitan Achievement Test. This study also found no gender differences between the reading achievement of children of similar age. Boyd (1989) found similar results based on examining the California Achievement Test Scaled Scores for grades 1-3 and the Stanford Achievement Test Scaled Scores for grades 4-5. The subjects were 85 students from a Cooperative Demonstrative Kindergarten in the Starkville public school system in Mississippi. The students were five years old on or before September 1 and were divided into two groups, younger and older. The subjects represented families of diverse income, educational levels, and diverse racial backgrounds. There were no significant differences at the .05 level between the groups in math and reading. Older students had higher mean scores in reading and math in grades one through three, but the younger students caught up or surpassed the older students by grade four and five. However, the study did find a significant difference for girls surpassing boys in reading at the fifth grade level.

Similar findings were found by Magliacano (1994) by studying the results of readiness and achievement tests between the older and younger children in her study. The scores from the Metropolitan Reading Readiness Tests and the Metropolitan Reading of 34 second grade students from a middle class community in Bloomfield, New Jersey were examined.

DeMeis and Stearns (1992) also found that the results of his study do not support the popular notion that younger children will experience more academic difficulties than their older classmates. This study was based on a sample of 1,676 students from a small multi-ethnic school district in upstate New York. DeMeis and Stearns (1992) studied data on academic/social/ behavioral referrals during a period from 1979-1985. In this study the researchers controlled for the number of referrals based on the base rate of total births per month throughout the whole district. They found that children were referred in proportion to the rate of birth in the population of the school district. Age entrance was not related to referrals. Proportionally similar numbers of younger students qualified for a gifted program in spite of the significantly larger number of older students referred for evaluation. Younger students were placed significantly more often in the pre-first grade than older students. Kindergarten teachers seemed to be basing their decisions on the age differences of the students. According to Gredler (1980) stated the 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 is going to have difficulty in school (as cited in Bergin & al.,1996).

Contrary to the belief that teachers depended on age factors in decisions of placement, Bergin, Osburn, and Cryan, 1996, surveyed 600 kindergarten teachers through the state of Ohio to determine what factors teachers weighed most in recommending retention. Eight

children were hypothetically profiled who had successfully completed the academic requirements of kindergarten, but differed by age, gender, and level of independence. Teachers were more likely to recommend retention for children who were dependent and immature. Neither age nor gender was a significant factor in placement. The researchers found it disheartening that 34 teachers recommended retention despite the fact that the hypothetical children had met the academic requirements. Older teachers were more likely to recommend retention.

The determination of developmental maturity or immaturity is a controversial issue. One of the most popular method used is the Gesell School Readiness Test developed at the Yale Clinic of Child Development under the direction of Arnold Gesell. Children who are deemed developmentally immature are recommended for delayed entry. Ames, Gillespie, Haines, & Ilg (1979) as cited in Buntaine & Costenbader (1997)) suggested that nearly 50% of all age-eligible kindergarten children were developmentally immature and at risk for failure. Banerji (1991) studied the predictive properties of the GSRT on 125 predominantly white kindergarten students in Florida in identifying at-risk kindergarten students. The evidence from this research found that the use of the GSRT was not an effective placement tool for extra year programs. Shepard and Smith (1988) as cited in Siegel & Hanson (1990) reported that when the GSRT and the Gesell Preschool Tests were reviewed by at least four independent testing experts in the Ninth Mental Measurements Yearbook, the tests were judged to lack the reliability and validity for placement purposes. The Metropolitan Readiness Test, considered one of the more reliable tests, had an error rate of about 30% when used for placement purposes according to Shepard and Smith (1988). Wolf and Kessler (1987) as cited in Siegel & Hanson (1990), stated that no readiness test to date has been shown to provide "long term predictive validity for academic success." Gullo (1994) as cited in Parks (1996) has opposed the "gift of time" theory that purported to allow time for children, and had instead called it the "theft of time", denying age-eligible children the right to enter school.

The use of tests to determine eligibility and postponement of entrance to kindergarten has been contested in the courts. The parents of a five year old girl filed a class action appeal on behalf of all developmental kindergarten students in a school. The petition which was upheld by the court, alleged that the use of the GSRT violated the rights of the children under state law to enter kindergarten at age five, to equal protection and due process under the U.S. and New York constitutions (Siegel & Hanson, 1990).

Readiness for programs that have become increasingly more academic has caused great concern for many children who are at risk for academic failure. School districts are in a quandary as they try to design curriculum to meet the developmental needs of children as well as fulfill the established academic goals of the curriculum. Developmentally appropriate programs focus on all of the areas of the development of the child, while developmentally inappropriate programs focus primarily on the cognitive area. The National Association for the Education of Young Children has defined appropriate and inappropriate instructional practices for children birth to eight (Bredekamp, 1987). The guidelines provide a framework for instruction which are based on cognitive

developmental theory that emphasizes active learning and interaction with materials, peers, and adults,

Burts and al. (1993) explored academic achievement in the first grade and the developmental appropriateness of kindergarten programs. The sample consisted of 166 first grade children who attended kindergarten classes identified as developmentally appropriate or developmentally inappropriate in one school district in a medium sized southern city. To measure achievement, data from report cards was used. Findings indicated that low SES children who participated in developmentally appropriate kindergarten programs were at the greatest disadvantage academically. No differences were noted in grades found between high and low SES children who attended developmentally appropriate programs. Burt and al. concluded that developmentally appropriate programs were not only age appropriate but were beneficial to children of all SES levels.

Few would dispute that the experience in a developmentally appropriate pre-school for three and four year old can greatly enhance the probability of future successful social and academic achievements. Lazar (1983) as cited in Siegel & Hanson (1990) reported the effects from twelve longitudinal studies of preschool graduates as follows: increased individual IQ scores, higher math and reading scores on standardized test throughout elementary school, less likely to be referred to special education, less likely to be retained in grade, and more likely to graduate from high school. To extend the positive benefits of the preschool experience to children of low SES families, Head Start was established to provide for a more successful transition to kindergarten.

The National Head Start Association (1990) as cited in O'Brien (1991) conducted an evaluation of Head Start that indicated that participants scored higher on tests of readiness for kindergarten and academic attitude than non-intervention groups. However, many of these gains were not sustained into the primary grades. O'Brien (1991) suggested that the "discrepancy in classroom organization and teacher style" between intervention programs and primary grades may have accounted for the difficulty. The National Head Start organization implemented a program in 1986 to study methods of promoting a successful transition into school. One of the studies proposed a school survival skill training approach. This approach would provide direct intervention focused on teaching specific skills immediately prior to children's transition. Skills necessary in school such as working independently at a table, following verbal directions, and responding to teacher directives would be taught. However, childhood educators resisted the idea that preparation for kindergarten was an appropriate function of preschool. Instead they found more favor in delaying school entry for children who appeared to be at risk (O'Brien, 1991).

In the past 30 years there has been an emphasis on intervention or transitional programs. However, in the 1990's budget cutbacks have resulted in fewer transitional programs. Although these programs were created to improve school success for developmentally immature children, O'Brien (1991) believes that the primary goal in providing for late entry is maturational, not educational. "Developmental" or transitional programs put off

the transition into school by a year. Children in developmental classes do not receive "intervention directed toward remediation of the specific deficits" that initially led to the placement. In addition, to further his argument O'Brien stated that at the end of the year children are rarely tested to determine if they can proceed to kindergarten. Gredler (1984) as cited in Shepard & Smith(1987) reviewed eight empirical research on transition classes and concluded that at-risk children, promoted to first grade, achieved as well or better than children who spent an extra year in prefirst programs. May and Welch (1984) also found participation in a prefirst program did not result in superior academic scores in third grade when measured by standardized tests (as cited in Buntaine & Costenbader). Shepard and Smith (1987) reported no significant differences between pre-first and non-retained students at the end of first grade. In prefirst, children are thought to have already experienced failure in kindergarten.

On the other hand, prekindergarten programs provide the time for developmentally immature children to mature before the entrance to kindergarten. Buntaine and Costenbader (1997) selected a total of 257 fourth and fifth grade children from a suburban, upper class, predominantly Caucasian, upstate New York public school system who met the criteria for developmental immaturity. The kindergarten screening used was the Gesell School Readiness Test (GSRT). Ninety matched pairs of children who spent an extra year in prekindergarten were compared with children who proceeded into a regular kindergarten based on gender, birthdates, and GSRT scores. Scores on the Stanford Achievement Test administered in the second grade and the Pupil Evaluation of Progress administered in the third grade showed no significant differences between these two groups.

Proponents of extra-year programs such as the Gesell Institute often cite a study conducted Dr. Judith Ford in Norman, Oklahoma. She found an impressive average gain of 55% points on the Metropolitan Readiness Test by 27 students in a transition class. However, the study was "fatally flawed" because this study had no control groups, which would have been important in determining how those children would perform had they been promoted rather than placed in a transitional program. Studies with control groups that show academic gains *do not persist into the next grade* (Shepard & Smith, 1988). According to Shepard, educators focus on the findings and often are not aware of the flaw of the research design

Buntaine and Costenbader (1997) noted the lack of research conducted on the effectiveness of prekindergarten programs. They proposed that future studies should focus on various geographical areas and socioeconomic groups. Walsh, et al. (1991) as cited in O'Brien (1991) found children of poverty families, minorities, males, and young age eligible children were far more likely to be placed in transitional programs. O'Brien, (1991) noted that when all these factors were considered, young boys from a low SES, minority families have an extremely high likelihood of being selected for a developmental program. This action could be viewed as discriminatory in light of the fact that research does not support the positive benefits of transitional programs.

The whole issue of entrance age, developmental versus chronological age, older versus younger, and transitional programs to accommodate these differences is a way to deal with the "unwanted heterogeneity" in kindergarten. Unfortunately, placing children in transitional programs does not create homogeneity (Shepard & Smith, 1986). A wide range of differences in ability, age, experience, etc. will always be present in a class. According to Alexander and Entwisle (1988) behavioral variability is always highest during transitions (as cited in O'Brien). Wide variability will be reduced naturally in later grades. Decisions made by well-intentioned parents to protect their children from stress related to making this transition may force children to cope with the possible negative effects of delayed entry. Schools need to focus on developing programs that meet the needs of children with a variety of differences--linguistic, cognitive, experiential, and developmental.

Synthesis and Analysis

The lack of agreement on the abundant research on entrance age and academic achievement makes it difficult to arrive at a decision to determine the optimum entrance age. One can find enough research to support the decision for late entry in promoting superior academic achievement (Crosser, 1991;Foote, 1991; Green & Simmons, 1962; Reinherz & Kinard, 1986; Parks, 1995; Sweetland & Simone, 1987. Conversely, there is enough corroborating research to abide by the entrance age set by the school district or state where no differences or very small differences in achievement were found in postponing entrance to kindergarten or first grade (Cameron & Wilson, 1989; Buntaine & Costenbader, 1997; De Meis & Stearns, 1992; Gredler, 1984; Magliacano, 1994; May & Welch, 1987; Quinlan, 1996. What accounts for the varied results in the research? An examination of other factors such as gender, socio-economic status, race, educational level of the parents, single parent families, second language learner, etc. may all influence academic achievement according to the National Center for Education Statistics. The research into these factors go beyond scope of this review of research.

Differences in the findings may be attributed to the design of the research. Crosser (1991) evaluated 20 studies on "summer children" by examining the characteristics of the research design namely those that included statistical significance of .05, the use of standardized tests to assess academic achievement, sufficient sample, sample limited to continuous enrollment excluding retained children, and special education students, and controls for ability and gender. She found only three that fulfilled the required characteristics in the design of the research. By examining and determining which research studies incorporated the criteria listed above one may be able to find more consensus in the findings. Shepard and and Smith (1988), in using the Ford study (p.12) noted how interpretation of a study can be misleading when educators are unaware of the flaw in the research design.

Comparisons and translations of research were made difficult by the fact that different cut-off dates were used. To determine younger and older students the study may have used one of the 17 or more cut off dates that exist today (Robinson & Lyon). The younger groups in one study may be the older group in another study. Caution must be used in translating the results. Variability in grouping the sample also made comparison

confusing. When dividing the sample into younger and older groups some researchers used two month intervals to determine birth date groups, and some used three to four month intervals. Some researchers used red-shirted students in the older group while other researchers placed them in a separate group. In the younger age group sometimes under-aged samples were used. Young students seemed to experience less academic success in studies where assessments for achievement were made in kindergarten such as in the research by Foote (1991) and Parks (1996). "Youngness" was defined as the relative position of the child in his sample group and not to an absolute age. Some studies found differences in academic achievement only between the oldest and youngest children in the sample. In order to make a reliable and valid interpretation of a study, it is important to become familiar with the details of the research design used.

In nearly all of the studies, researchers studied the official school records to identify the birth dates of students. Subjects were then grouped according to birth dates. Achievement differences between groups were determined by examining test scores. The use of different measures to assess achievement or readiness such as standardized versus report cards may influence the results that favored one group over the other.

The research can be grouped by those that found significant academic differences favoring older entrants and those that found no differences. They can be grouped by those that examine assessments in the primary grades and those that examine upper grade test results. Studies by Foote (1991), Parks (1996), and Crosser (1991) found academic advantages for older students in the primary grades. The findings by Crosser, who studied test results from fourth graders, even found academic superiority for "red-shirted" students. Cameron & Wilson, 1990, who studied test results in fourth grade, and Quinlan (1996), found small differences or a low correlation between the academic achievement of older and younger students. Boyd, 1989, who examined scores for grades 4 and 5, Magliacano (1994) who studied the test results of second grades, and De Meis and Stearns (1992) who examined test scores from grades kindergarten through twelve, found no academic advantage for the older students . Research by Shepard and Smith (1987) suggested that academic gains diminished or disappeared as early as third grade. According to Chase (1985) early assessment is not predictive of success because of the inconsistent skill development in young children (as cited in Porwancher & Lisi, 1992).

Most researchers were in agreement that chronological age is the only unbiased criterion for school entry according to the NAEYC (Bredekamp, 1987). While accepting the fact that individual maturational differences exist, determining developmental age level is both time consuming, expensive, and have questionable value in determining decisions on placement or postponement of entrance to school for young children (Porwancher & De Lisi, 1992). Lofthouse (1987) as cited in Magliacano (1994) has proposed a national cut-off date give a child the opportunity to enter kindergarten, regardless of ability or circumstances.

Although the experience of preschool in preparing children has been beneficial, some concern was expressed for making transitions from preschool to kindergarten and kindergarten to first grade. It was noted that gains in Head Start did not always transfer

into public school. O'Brien (1991) noted the discrepancy in classroom organization and teacher style between the two programs.

Many researchers agreed that placing children in transitional programs such as prekindergarten and prefirst or junior first grade was not beneficial. Shephard (1989), as cited in Buntaine & Costenbader (1997) conducted a comprehensive review of the effectiveness of transitional programs for developmentally immature children and found that research does not support their academic benefits for the developmentally immature child. Opponents likened transitional programs to retention and tracking. Proponents suggested that these programs were preventive and provided for an extra maturational year. In the meantime, retentions have increased and more parents continue to delay school entry for their children according to Meisels (1992) often resulting in a wider age range with an even broader range of developmental ages (as cited in Buntaine & Costenbader , 1997). Shepard & Smith, (1988) stated that educators may not be aware that the practice of retention may actually contribute to escalating the curriculum to meet the needs of older children. They suggested no retention in kindergarten as an alternative, with curriculum and instructional practices that accommodate a wide range of individual differences.

Most researchers seem to agree that kindergarten programs should be developmentally appropriate. They express concern that the first grade curriculum has been pushed down from the kindergarten requiring five year olds to tackle an academic curriculum which focuses primarily on cognitive skills that required more paper and pencil activities. Chronological and maturational differences exist even if attempts are made to limit them. In any given kindergarten class it is probable that there is a year range chronologically and acknowledging individual differences, and an even wider maturational differences. Curriculum needs to be flexible enough to accommodate these differences.

Conclusion

While the research findings often contradict each other, the author of this review of research concluded that school entrance age does not affect academic achievement. While acknowledging that older children may show an academic advantage in the lower grades, the preponderance of studies seemed to support the fact that these gains diminished or disappeared as early as third grade. By delaying entry for one year, "redshirted" students probably would not outperform his younger classmates. Therefore, Cameron and Wilson (1989) concluded it was not advisable to delay entry school entry for age eligible children.

The conclusion from the research suggested that most children should enter kindergarten when they are age eligible whether they will be younger or older than their classmates. Initial differences in academic achievement may appear but in a few years the differences will no longer be discernible.

Some natural differences should be expected given a 12 month range age and ability range in a kindergarten class, regardless of what the cutoff date is. Teachers need to

provide a curriculum that addresses these individual developmental and academic differences.

Although most researchers agree that chronological age provides the most unbiased criterion for entrance to school, testing for developmental age has been controversial. Readiness tests such as the GSRT have been used to determine delaying school entry for age eligible children. Research does not support the predictive utility of these tests. May and Welch (1984) as cited in Freberg (1991) found that age eligible children who were "over-placed" children (judged unready but chose to be enrolled) performed as well as their classmates.

Transitional programs that "buy time" for developmentally immature have not proven to improve academic achievement. The intent in creating transitional programs was to provide an extra year for children to mature, with the assumption that additional time will promote future academic success (Porwancher and De Lisi, 1993). Shepard and Smith, (1986) describe transitional programs as equivalent to tracking, and prekindergarten curriculum as lacking in stimulation and challenge. According to Gnexda et al.(1991) as cited in Porwancher & De Lisi (1993), developmentally young children are not exposed to brighter peers, and the more advanced kindergarten child is given a more academic curriculum. Mantzicopoulos and Morrison (1990) as cited in Buntaine & Costenbader (1997) found that children who have been placed in prefirst programs experienced significant amounts of stress associated with their failure to qualify for regular first grade.

Whether it be a recommendation for a young student to delay entry into school, be placed in a prekindergarten or junior first grade the student will enter school with a label of being not ready. Children have a basic right to enter school, have access to a free education, and to equal protection under the law (Siegel & Hanson, 1990). Charlesworth (1989) as cited in Parks (1996) stated, "The problem with delaying school entrance for those children not ready is obvious. By excluding them from rich learning experiences, they become progressively behinder, behinder, and behinder." (p. 7)

Recommendations

Administrators and teachers need to assess current research on school entry age before advising parents on the best course of action when enrolling their age eligible children. There is a tendency for educators to suggest delaying entry for a year for young children to mature, particularly boys. This recommendation is based on hope and "myth", not on empirical research (Siegel & Hanson (1990). Administrators need to become more knowledgeable of the contemporary practices in kindergarten so they can provide guidance and leadership (Siegers, 1996).

Planning time should be made available to teachers to develop kindergarten programs that meet the needs of children linguistic, cognitive, experiential, and developmental differences. The size of kindergarten classes need to be reduced. Each class should have the services of an instructional assistant to assist in meeting the needs of the children. Assuming that many kindergartens have a more academic curriculum, teachers need to be

inserviced on learning effective developmentally appropriate teaching strategies as well as evaluative practices to assess students' performance.

Funding should be allocated for the creation of more developmentally appropriate preschools that would be made available for all children. Parent education should be an integral part of a child's participation in a preschool or enrollment in kindergarten. Some planning should involve preschool and kindergarten teachers to facilitate a successful transition for the children.

More empirical research needs be conducted that include children from other areas of the country since they reflect a different, unique population culturally, linguistically, ethnically, etc. Buntaine and Costenbader (1997) stated that more reseach needs to be conducted on the effectiveness of prekindergarten. It seems that most of the research has been based on the midwestern or eastern student population of the United States. Research in other areas would be beneficial to educators. For example, it would be interesting to see research on the academic achievement for students enrolled in a year-round schedule in California.

Lofthouse (1987) as cited in Magliacano (1994) recommended a national cut-off date that would provide uniformity for our mobile population. It would minimize the confusion of a child being considered older or younger, or even being denied because of the difference in cut-off dates from state to state.

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