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ABSTRACT

In response to California Legislation that would change the cut-off for the minimum 5-year entrance age from December 2 to September 1, this paper reviews the literature discussing the appropriate age for beginning school. The review includes a brief history of kindergarten and its place in California law; discusses the possible impact of the proposed legislation upon California's demographic issues; and summarizes major theories of childhood development and relates them to kindergarten readiness. The review groups and characterizes the literature according to the effect of school entrance age upon scholastic achievement. The literature's consideration of other factors such as gender, socioeconomic status, preschool attendance, and influences of teachers' perceptions and methods is reported. The review also considers trends evident in the literature, such as an increasingly academic kindergarten curriculum, increasing emphasis on testing, and growing parental sentiment for delaying school entry. The review lists California programs such as the CalWORKS welfare program, the Class Size Reduction Initiative, year-round schools, the Standardized Testing and Reporting Program, and universal publicly funded preschool as programs that would be affected by altering the entrance age. Two appendices list characteristics of kindergarten admission in other states and summarize specific studies. (Contains 155 references.) (AB)

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READINESS FOR KINDERGARTEN: WHAT DOES IT MEAN?

A Review of Literature in Response to a Request by Assemblymember Kerry Mazzoni

By

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ISSUE

Assemblymember Kerry Mazzoni, on behalf of California's Assembly Education Committee, requested the California Research Bureau to conduct a review of the literature regarding the appropriate age for children to begin school. This request is in response to proposed legislation (AB 85, Runner), which would change the date by which children must reach the minimum entrance age of five years to begin kindergarten, from December 2 to September 1, preceding the start of the academic year.

This paper begins with a history of kindergarten.

HISTORY OF KINDERGARTEN

Since nearly all children attend kindergarten nationally and in California, it may be helpful to understand the context from which kindergarten has evolved.

The original kindergarten, established in Germany in 1837 by Freidrich Froebel, taught children, ages 3-7, through the use of symbols. The symbols transmitted knowledge, and reflected his interpretation of the relationship between the individual, God, and nature.[1] The symbols included "gifts and occupations," which taught young children the importance of the unity between the individual, God, and nature. For example, he designed "gifts" which included ten sets of manipulative materials. Each gift was to be used to make some particular constructions that were specified by the kindergarten teacher. The occupations designed by Froebel were arts and craft activities and constructions.[2]

Froebel believed that education should foster the natural development of children and he used the garden to symbolize children's education.[3] Play was seen as an important means of enhancing self-development. To accomplish this, Froebel believed that children, beginning at age three, should be placed under the guidance of a properly trained governess for part of the day.[4]

As Froebel's kindergarten gained widespread popularity in Germany, Froebel and his followers trained more women to be teachers who specialized in this new concept of kindergarten. Many of those trained teachers migrated to America in the mid-nineteenth century. In 1856, the *American Journal of Education* published Froebel's ideas for the first time in a pamphlet.[5]

That same year, Margaret Schurz established the first kindergarten in Watertown, Wisconsin. She invited other children into her home, where she created a kindergarten program with her own daughter.[6] Other German language kindergartens were established during this time in other cities across America.

A few years later, Schurz met Elizabeth Peabody in Boston. Peabody founded the first English-speaking kindergarten in 1860. She traveled throughout the United States speaking about the purpose of kindergarten and its benefits to children. In 1873, she

convinced the superintendent of the St. Louis public schools to establish the first public school kindergarten. Within six years, there were 53 kindergarten classes in St. Louis.[7]

For the remaining years of the nineteenth century and the beginning of the twentieth century, many different agencies continued to sponsor the growth of kindergartens. These included churches, settlement houses, factories, and trade unions. Increased numbers of private kindergartens were also established.[8]

During this time, the original purpose of kindergarten began to fade. Kindergarten was used to socialize and Americanize young immigrant children and their parents.[9] Kindergarten was seen as a means to improving the living conditions of impoverished children by providing food and clothing, in addition to an education. Some of these kindergartens viewed their role as strengthening family relationships.

During this same period, kindergartens joined elementary schools, as they were called upon to serve as a transition from children living at home and going to elementary school. To that end, kindergartens provided the necessary "socialization" for adjusting children gradually to the "academic" rigors of the primary grades.

Kindergarten in these early days was philosophically distinct from the primary grades. It was a place for children to play and practice manipulative activities rather than a place for formal structured lessons and recitations. Classes focused on music, art, and nature study, as opposed to teaching the "Three Rs."[10]

Gradually, kindergarten's curriculum was modified. Many kindergarten teachers succumbed to the "tyranny of the primary teacher," and focused more on discipline and neatness.[11] From the tensions between kindergarten and primary teachers, the content of the curriculum for kindergarten was coordinated with that of the primary grades.

Numerous developments around the world at the turn of the century influenced American's kindergarten. Among these were Maria Montessori's research and work in Italy that focused on poor and mentally retarded children. She designed a teaching method that employed sequential small steps, which enabled her students to develop their five senses.[12] Children's five senses had to be trained in order for children to learn.[13] [14] One important contribution of Montessori's methods was observing individual children in order to determine their readiness for more advanced tasks.

Other developments during this time included the theories of psychoanalysis, formulated by Sigmund Freud, and their subsequent applications to education as researched by Susan Isaacs, a British educator.[15]

American influences in reforming American kindergartens included John Dewey, Stanley Hall, and Edward Lee Thorndike.[16] Dewey, a philosopher, believed that the goal of education was to prepare individuals for life in a democracy, and advocated the theory of "learning by doing." Hall, a developmental theorist, was one of the first scientific psychologists, and is credited for greatly advancing the study of early child development.

Thorndike, a learning theorist, developed the theory that the primary means of learning is through trial and error, and that the goal of an educator should be to assist in reducing errors by connecting stimuli with the correct responses. Both Hall and Thorndike advanced the idea that kindergarten teachers should instill proper social habits in children, which would be the basis for their adult behavior later on.

The child study movement, as initiated by Hall, suggested new ideas about educating young children as a result of observing them, including allowing children to express their emotions and behaviors as a natural occurrence in child development.[17] Concurrently, a progressive education movement was emerging, which emphasized freedom and activity in the classroom, and suggested that kindergarten education should reflect a child's everyday life.[18]

Another prominent educator was Patty Smith Hill, who is credited for modernizing America's kindergartens. She substituted selected arts and crafts for Froebel's "occupations;" supplanted Froebel's "gifts" with building blocks and dramatic play areas; and included American songs and games in her curriculum. This progressive kindergarten was child-focused, and its activities helped children move their thinking to higher levels. Hill also advocated the combination of kindergarten and first grade in order to *lessen* the academic emphasis of first grade, but *not* to increase the academic focus of kindergarten. She believed that first graders should also be given the opportunity to be creative, and to choose activities they wanted before beginning the basics of reading and arithmetic.[19]

Even though not all children had access to kindergarten education, by the 1920s, some public schools offered kindergarten. By the beginning of the 1930s, kindergartens experienced a decline in enrollment. Some scholars believe the decline was largely in response to the economic depression of that time,[20] while others believe it was because the public did not either understand or value the concept.[21]

A decade later, many American women began working outside the home in order to support the World War II effort. In response to this shift in the labor force, the federal government enacted the Lanham Act to provide child care to these workers, and kindergarten again increased in popularity. After the war, however, these federal funds were withdrawn and most childcare centers disappeared. Yet, kindergarten continued to grow.

By the 1960s, schools came under pressure to change in reaction to a variety of causes, including the launching of Sputnik in 1957, the civil rights movement, a general concern for national security, the war on poverty, and the national level of illiteracy. Kindergartens were viewed as a means of assisting children to get an early start on their education by introducing academic concepts earlier. Since the 1960s, kindergarten education has increasingly focused on the development of academic skills and less on socialization. In response to this shift, many education professionals have tried to define "developmentally appropriate practices" for young children and the purpose of kindergarten.

CALIFORNIA'S CURRENT LAW REGARDING KINDERGARTEN

Current California Education Code §48000 requires school districts to offer kindergarten classes for a child who is age five on or before December 2 of a school year. If a child turns five during the school year (after December 2) the governing board of a school district may, on a case-by-case basis, admit that child to kindergarten with the approval of the child's parent or guardian, as long as two conditions are met:

1. The governing board determines that it is in the child's best interests; and

2. The parent or guardian is given information regarding the advantages and disadvantages and other explanatory information concerning the effect of a child's early admittance to school.

California law does not mandate a child's attendance in kindergarten, even though current practice is that most children (approximately 91 percent) attend kindergarten. *Compulsory education in California does not begin until a child is six years of age.* Section §48200 of the California Education Code requires children between the ages of six and 18 to be subject to compulsory full-time education. Based on current law, it is possible for a child who is as young as four years nine months, or as old as six years nine months, to enter kindergarten. The minimum age is based on a December 2 birthdate, while the maximum age is for children who are eligible but may be held back.

History of California's Law

In 1891, California enacted its first formal policy regarding children's admission to kindergarten. The Political Code at that time, §1617, allowed children's admission to schools at the age of four years in cities and towns in which kindergarten had been adopted as part of the public primary schools.

In 1913, §1617 of the Political Code was amended. It raised the minimum entrance age of children into kindergarten to four and one half years of age. At the time, school districts had the choice of enrolling children in either the fall term or fall/spring term. This meant that children who began school in September needed to be age four and one half by October 1. For those who began school in February, they needed to be four and one half by March 1.

In 1933, the minimum age of children admitted to kindergarten became a controversial issue. In that year, "The Kindergarten Bill" proposed changing the law to raise the age at which children would be admitted to kindergarten to five years. Both legislative chambers passed the proposal. Governor James Rolph then vetoed the proposal. The Governor's veto statement provides us with insight into the controversy:

> *...The opponents of the bill contend that the measure, if signed by me, will affect adversely the entire educational system of California.*

I am convinced that the training and environment of the kindergarten has become an important factor in primary education, and primary education is recognized to be the most essential element of an educational system. As stated by one educator, "the kindergarten is more important than the university." It is in the kindergarten that the children are of the age when they are most impressionable, and receive their first directed training in social values, language, habits and character.

Parents and educators alike agree that an age of four and one-half years is a desirable age at which children should begin to receive the benefits a kindergarten offers, for it is upon the training received at this age that their future development in a large part depends.

A further objection to this bill, and one of major importance in consideration of the measure, is the fact that if the bill is signed, its ultimate effect, particularly in smaller communities will be to abolish the kindergarten entirely; depleted attendance will reduce the average daily attendance below ten, so that the kindergarten, under existing provisions of the law, will have to be discontinued. Thus, in some communities, all children would be deprived of kindergarten advantages, even though some of the children in the community met the age requirements of the bill before me...

Both houses of the State Legislature subsequently overrode the Governor's veto. An article in the *Sacramento Bee* on July 18, 1933, described the override as offering a savings of between $1,000,000 and $1,500,000 per year, a considerable sum in the 1930s.

In 1941, the law was changed to distinguish the entrance age for school districts that had either one or two school terms. For school districts having only one school term (i.e., September to June), children entering kindergarten had to be four and one-half years of age on September 1. For school districts operating two terms, the requirement was that children entering kindergarten needed to be four years nine months old on September 1 for the fall term admission, and four years nine months old on February 1 for the spring term admission. Some two-term school districts facilitated children who were too young to enter kindergarten in the fall term, but old enough to do so in the spring. This allowed those children who were not eligible for the fall term to enroll sooner, rather than wait an additional year.

In 1945, the issue of entrance age was revised again in order to establish a more uniform procedure for admitting children into kindergarten into one and two term districts at the age of four years and six months.

In 1951, the law was changed yet again. It raised the entrance age requirement for kindergarten children from four years and six months to four years and nine months by September 1. At that time, the California Teachers Association (CTA) supported this policy change, arguing that children who were admitted to California schools were

unprepared mentally and emotionally to begin classroom instruction. The CTA noted that children did not develop "reading readiness" until a later age. Younger students tended to have lower scores on competitive tests than older children in comparable grades in other states. Furthermore, the CTA recommended to Governor Warren that the responsibility for handling younger children in kindergarten tended to be custodial rather than educational.

It would be more than two decades before the law was examined again. In 1974, the law was amended to allow parents to petition for the early entrance of their children into kindergarten. This petitioning process was for children who had attained five years of age at any time after the beginning of the school year.

The most recent change to the law occurred in 1987, with an amendment that allowed children to enter kindergarten if they were five years of age on or before December 2. This amendment did not change the age at which children can enter school because children must still be four years and nine months in September when the school year begins.

OTHER STATES

In 1986, Mississippi was the last state to join other states by including kindergarten as part of the public school experience. Whether kindergarten will be provided is no longer an issue within the various states. Instead, current debates have focused on issues such as: whether kindergarten attendance should be compulsory; whether kindergarten should be provided half-day or full-day; what the age requirement should be for children entering kindergarten; and how school "readiness" should be defined.

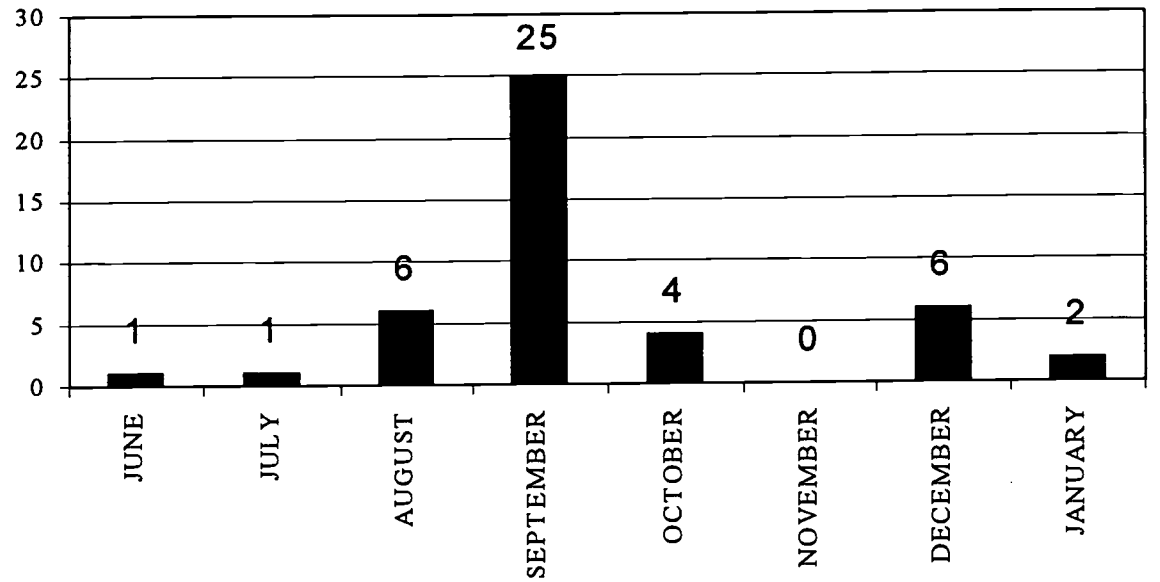
Although California has a unique social and physical environment that is shaped by its own history and traditions, it may prove useful to review policies enacted by other states regarding age requirements for kindergarten.

States Have Different Requirements for Kindergarten. In 1997, 36 states reported[22] having a mandatory policy that local school districts offer kindergarten, while 14 states reported having a permissive policy of whether or not local school districts offer kindergarten. The same report indicated that only 11 states required compulsory attendance of pupils in kindergarten, whereas 39 states did not.

There has been a national trend towards raising the minimum entrance age for children entering kindergarten in the past quarter century. According to an Educational Research Service survey in 1974,[23] 15 percent of the reporting school systems had a September cut-off date, while 43 percent of the reporting school systems had a December/January cut-off date.

A nearly complete reversal has occurred from 1974 to the present time, as can be viewed in Chart 1 below, which shows that 50 percent of states have a September cut-off date, while only 17 percent of states have a December/January cut-off date.[24] While many states have changed their policies to require children to be older when they enter school, there are no studies that evaluate the effects of the recent trends. A more detailed discussion of policies of other states appears in Appendix A.

Chart 1
Other States' Kindergarten Entrance Age Policies



DEMOGRAPHIC IMPLICATIONS OF CHANGES IN KINDERGARTEN ENTRANCE AGE REQUIREMENTS

Statewide Indicators[25]

California has an estimated 34 million residents, of which 7 million, or 21 percent, are children under the age of 14. An estimated 603,000 children who are five years old or younger are living in poverty.

About 51 percent of California children who live in households where either both parents or the single-parent head-of-household is in the labor force are five years old and younger. Half of the 1.6 million children aged five years and younger have parents in the labor force and are in childcare outside the family. To that end, a significant number of children may be affected by a change in entrance age policy.

A steady increase of women in the workforce during the last forty years accounts for the large percentages of children who require childcare outside the family. Furthermore, more parents, irrespective of social class and ethnic background, have acknowledged the benefits of preschool, and have enrolled their three- and four-year old children in formal preschool programs or centers. This trend is independent of whether or not the mother works outside of the home.[26]

The Department of Finance Demographics Unit has estimated that there are approximately 600,000 five year old children in California. By extrapolating this number, we can determine the number of children who might need child care or preschool for an additional year because of a change in entrance age policy. As a result, we find that approximately 75,000 of currently eligible children would be affected by such a state policy change.[27]

School Indicators

As of October 1996, there were 469,965 children enrolled in kindergarten in California's public schools and 73,634 children enrolled in private kindergarten schools.[28] An estimated 91 percent of eligible five-year-old children are enrolled in kindergarten in either public or private schools.[29] Of the enrolled public school kindergartners, almost 46.3 percent were Hispanic, 35.2 percent were white, 8.3 percent were African American, 9.5 percent were Asian/Pacific Islander, and 0.7 percent were Native American.

The diversity of languages spoken in California's public schools is significant. About 36 percent of the kindergarten students enrolled in public schools have Limited English Proficiency (LEP) and speak one of 57 different languages collected by the California Department of Education.[30] This language diversity complicates the issue of readiness for kindergarten, often making it difficult for teachers and children to communicate with one another. A child may be developmentally ready to begin school; however, it may be difficult to ascertain his or her readiness if the child is unable to communicate his or her abilities to the teacher.

UNDERLYING THEORIES OF CHILD DEVELOPMENT AND THEIR RELATIONSHIP TO LEARNING

Child growth and development is still a relatively new field of study. While we have learned a great deal regarding child development, disagreements exist among child development professionals about the precise nature of a child's characteristics at various stages. The various stages of child growth and development are based on theories of *how children learn*. Four different methods have been identified in the literature. They are: maturationist, behaviorist, environmentalist, and interactionist/constructivist.[31] The underlying theories have profound implications for how we conceptualize "readiness for kindergarten." In addition, they have implications for how kindergarten should be taught. Following is a brief description of each theory.

Maturationist

During the 1920s and 1930s, Arnold Gesell's study of child development influenced the evolution of kindergarten. Gesell believed that all human behavior develops in a highly patterned and largely predictable way.[32]

His maturationist theory views a child's readiness for kindergarten as biological. Knowledge exists within a child, and it is through the unfolding of innate abilities as the child matures, that he or she develops an understanding of the world.[33] As a consequence, knowledge is acquired as the child's level of maturity is ready for it. These developmental stages form the basis for what Gesell described as developmental age (as opposed to chronological age).

The goal of education, from the maturationist's view, is to provide the kind of environment that optimizes each child's emerging knowledge, and to match instructional tasks to each child's developmental level.[34] Since kindergarten children are not ready for formal instruction because they generally lack maturity, it is argued that academic instruction should be avoided.

Maturationists believe that time for growth is the only means for enhancing readiness for children. As a result, subscribers to the maturation theory advocate applying the "gift of time" to children who are considered unready for school.[35] To that end, maturationists suggest several alternatives that provide the extra time necessary for development, including: retention in a grade level; referrals to transitional kindergarten classrooms; or holding children out of school for an additional year.

Gesell also developed "developmental screening tests" to be able to *predict* whether children would be ready for placement into kindergarten and first grade, along with "school readiness tests" to determine a child's existing developmental level of maturity. A further discussion of these tests appears in the Emphasis on Testing section below.

Behaviorist

According to the behavior theory of learning, knowledge is external to a child. Knowledge is acquired by piecing together a set of sub-skills that form a total.[36] For example, in order for children to learn to write, they must begin by learning the letters of the alphabet; being able to distinguish upper-case and lower-case letters; possessing the dexterity to hold a pencil in order to make the strokes to form letters; and then learning how different letters combine together to form words. Children develop progressively over time and are able to complete complex tasks. "Rewards" are used to positively reinforce "correct" behaviors and responses (i.e., receiving a "star" for good work). In this way, education is viewed as providing the appropriate reinforcements to motivate a child's learning.

According to the behaviorists, a child's learning process is passive. For example, a teacher directly instructs a class by using sequential steps.[37] One goal of kindergarten,

based on the behaviorist view, is to prepare children for first grade and later learning. The behaviorists employ instructional methods that incorporate the use of workbooks for practicing and reinforcing a teacher's lesson.[38]

Environmentalist

The environmentalist theory is a variation of the behaviorist theory. Here, knowledge also resides in the external world. However, the environmentalist views kindergarten readiness as a place where skills and experiences are "cultivated." Like the behaviorist, the environmentalist believes that a child is like a puzzle. The goal of education is to identify the missing pieces (skills, abilities, and knowledge), and to provide instruction in order to complete the parts of the puzzle properly.[39]

The role of a teacher is to identify a child's deficiencies through assessments, and to provide appropriate experiences that correct these deficits. Environmentalists consider interventions as vital, whereas maturationists consider them forbidden. For example, the environmentalist approach uses the following types of interventions to provide extra services for children. These may include: 1) school attendance before the legal entrance age (i.e., preschool, early admittance to kindergarten); 2) extended attendance during what is normally a half-day kindergarten; 3) smaller class sizes; and 4) additional staff and resources. This approach is often used to provide services to children who are considered disadvantaged or at-risk to enhance their readiness for school.[40]

Interactionist/Constructivist

The interactionist or constructivist approach combines aspects of both the maturationist and the behaviorist theories. For example, interactionist/constructivists believe that knowledge exists both in a child as well as in the external world. It is through children's interactions with their social and physical environment that they adapt and learn throughout the various stages of development. Children, according to the interactionists/constructivists, recognize that there are things that they do not know or understand. This lack of knowledge motivates them to question, test, modify, and form new ideas on the basis of new information.[41]

The goal of education for interactionists/constructivists is to provide an environment that stimulates a child's inquiries. The teacher's role is to provide guidance and appropriate experiences to further develop a child's understanding of the world.[42]

Discussion

These descriptions present many views of child development theory and methods for learning. Much educational research has focused on maturational and behavioral theories, which commonly characterize the issue of a child's readiness for school in terms of his or her own personal characteristics.[43]

These theories suggest that a child's readiness for school can be determined through assessments. They would pursue different interventions for a child who is considered not ready. For example, a maturationist may consider holding a child out of school for an additional year, retaining a child in a grade, or placing a child in a transitional or pre-first grade class. An environmentalist may try to intervene and provide special services to enhance a child's readiness.

For the interactionist/constructivist, determining a child's readiness threshold is not an issue.[44] The interactionist/constructivist believes that the school should be ready to accept and work with all children, at their various levels of development, as they arrive at school.

KINDERGARTEN ENTRANCE AGE

One objective measure that state policy relies on as a standard for admitting children to public kindergarten and first grade is chronological age. Other countries and states use similar policies. Following is a summary of age requirements for starting school in nine selected countries.

A Comparison of International Policies

Most children in traditional American schools begin kindergarten when they are about age five. However, when compared with other nations based on one study, the United States ranks as one of four countries with the earliest school-entry age.[45]

Country	Age
Britain	4
Australia	4-5
New Zealand	On 5th Birthday
United States	5
Soviet Union	6
Switzerland	6
Japan	6
West Germany	6
Sweden	7

None of the countries included in the study require testing; however, in order to determine school readiness, local and state authorities in those countries may use various assessment tools. These range from checklists to standardized tests. None of the countries studied use standardized tests for placing kindergartners in ability groups. However, it was found that Britain and New Zealand group kindergarten children by ability, while Japan and Sweden do not.

Retention practices also vary. Japan and the Soviet Union do not retain students in grade, while West Germany, Switzerland, and New Zealand do. In these latter countries, retention rates range from five percent to 33 percent. Further, debates similar to those

occurring now in the United States regarding the curricular content of kindergarten (academic versus social) occurred in Britain, Japan, and the Soviet Union.

The Debate in America

For many years there has been controversy in America about the appropriate age for children to enter school. Issues were raised in 1963 when R.V. Hall reported that parents were pressuring schools to lower the entrance age for kindergarten admission in order to get their children's formal education under way.[46]

Since that time, many states have raised the minimum entrance age for children beginning school. This trend, however, has been in reaction to a multitude of concerns. For example, many scholars have noted that some children, particularly younger children, are less ready for the academic rigors of school. Unfortunately, there have been no studies conducted that evaluate the effects of state policy changes regarding entrance age.

The Relative Nature of School Entrance Age

Age is not an absolute predictor of a child's success; it is relative only to the child, and in relation to other children in his/her class.[47] No matter what entrance age is determined appropriate, there will always be older and younger students in the class that can be roughly 12 to 24 months apart. To raise the entrance age does not eliminate the problem of having both younger and older children in a classroom.

The effect of age on performance has been studied in other countries.[48] One study conducted in Sweden, a country with a policy that starts children in school at age seven, found that 36 percent of children showed inadequate reading scores in spite of the fact that they started school at an older age. Conversely, a study conducted in Britain, where children begin school at age four, found that younger children were more often given lower grades than older children.

A Literature Review on Entrance Age Studies

Numerous studies have attempted to determine the appropriate age for children to begin school.[49] Most of these studies have compared younger children to older children of the same grades. These studies focus on the relationship of entrance age to scholastic achievement. They also examine the relationship of entrance age to intelligence, social performance, social acceptance and self perceptions, behavior problems, psychological referrals, retention rates, and differences in gender.

Organization of the Literature. This section of the paper organizes the literature as follows: (1) studies that have found no initial performance differences among children based on their ages when they enter kindergarten; (2) studies that have found performance differences in children based on their ages when they entered kindergarten (otherwise referred to as a "birthdate effect"); and (3) studies that examined the long-term results of entrance age on the performance of children.

This section also summarizes several contributing factors that may affect a child's performance relative to his/her age. These factors include: gender; socio-economic status (SES); preschool attendance; teacher perception; and teaching methods.

Studies That Found No Initial Performance Differences Based on Age

Several studies show that there is no significant difference in performance between younger and older children in kindergarten.[50] These studies found:

- Ninety-seven percent of the younger children score average or above on intellectual ability tests.[51]
- Younger children do not experience more academic or social difficulties than their older classmates.[52]
- Teachers rate younger students as at least average regarding their social, emotional, and physical/motor development.[53]
- Younger children qualified at the same rate as their older counterparts for gifted placement, although a greater number of older children had qualified for the program.[54]

Studies That Found an Initial Birthdate Effect

Conversely, several studies found that children who are younger than their peers do not perform as well as their older peers in kindergarten.[55] These studies suggest several common themes:

- Children who are older when they begin school have higher levels of academic achievement (i.e., higher scores on tests or higher grades received) than the younger children.[56]
- Children who are older when they begin school have more success in maintaining a regular progression from one grade level to the next than do their younger counterparts.[57]
- Children who are younger receive more referrals to psychological counseling that result from academic rather than behavioral (i.e., social or emotional) concerns.[58]
- Children who are younger have more difficulty with social skills. This results in younger children being disliked and showing more aggression than their older counterparts.[59]

Studies That Found a Long-Term Birthdate Effect

Of those studies that found an initial birthdate effect, several found a persistent difference in performance over time between older and younger children in the same grade.[60] The duration of the birthdate effects varies with each study. These studies showed that:

- Children who are older when they begin school achieve at a higher level than their younger peers in terms of grades and scores on scholastic tests.[61] These studies found persistent effects through grade 4,[62] grade 6,[63] and grade 10.[64]

- Children who are younger are not able to overcome a lower ranking throughout their elementary years.[65]

- Although children who are younger do not perform as well as their older counterparts, most of these young children make average school progress in terms of their grades, test scores, and average ratings from teachers. Younger children also did not exhibit a greater number of problems, either academic or behavioral.[66]

Studies That Found No Long-Term Birthdate Effect

Several studies found that age did not affect a child's long-term performance.[67] These studies argue that in the long-term, any initial differences in performance disappear between children of the same grade. There is some discrepancy among these studies, however, as to when these differences disappear. These studies show:

- The initial performance differences related to the birthdates of the children diminish with time as the children get older.[68] It is not known whether they do so spontaneously or because of intensive remedial assistance or grade repetition.[69]

- Differences in information processing skills affect the performance of children, rather than their age.[70]

- By first grade, the social and emotional differences between the younger and older children disappear.[71]

The review of the literature does not provide a definitive answer to the question of what is an appropriate age to begin kindergarten. However, there are several possible contributing factors that may explain the effects of age. These include differences in gender, socio-economic status, preschool attendance, teacher perception, and teaching methods. An overview of these factors may provide a better understanding as to why some younger children may not perform as well as older children.

Gender May Affect Performance More Than Age

Differences in gender may affect the performance of younger children.[72] The issue of gender as a factor is summarized below.

- Chronological age affects academic achievement more in underage boys than underage girls.[73]
- Poorly performing boys receive more years of special education and multiple years of psychological services than girls who also lag behind in achievement.[74]
- Boys (and especially, younger boys)[75] are referred more often for psychological counseling than girls.[76]

These studies indicate that the birthdate effect is more prevalent with boys than girls.[77] It has even been suggested that boys should begin school six months after girls.[78] (However, the Civil Rights Act of 1964 would prevent such a policy from being introduced.) According to one report, "Girls simply mature faster than boys." [79]

Yet conversely, at least two studies found that gender did not affect performance.[80]

Socio-Economic Status May Affect Performance More Than Age

One study found that older children performed better in reading than their younger counterparts. However, when the children were adjusted for their socio-economic status, the study found that students from higher socio-economic backgrounds score, on average, 32.3 percent better than children from lower income backgrounds.[81]

Preschool Attendance May Affect Performance More Than Age

There is a relationship between the number of years a child attends preschool and his/her later performance. However, there are no differences in achievement scores between the older and younger children who begin preschool by age three. Children who enter preschool or kindergarten at ages four and five show a difference in performance based on their birthdate.[82] Thus, children who enter preschool by age three are likely to exhibit comparable performance patterns, regardless of their age.

Influence of Teachers' Perceptions on Entrance Age

A number of studies suggest that teachers may treat younger and older children differently.[83] These studies show:

- Teachers rate the performance of older children better,[84] girls at a higher level,[85] and older children as being more popular and exhibiting more socially acceptable behavior.[86]

- Teachers more often suggest placing younger children into transitional kindergarten classes.[87]

- Teachers more often referred younger children to psychological services[88] or retained younger children in a grade.[89]

The influence of the teacher in kindergarten cannot be underestimated. Teachers are responsible for the curriculum, environment of the classroom, and progress of their pupils. These studies suggest that teachers may be biased against younger children, and that they perceive younger children as performing less well. To that end, the success and concomitant performance of a child is in large part determined by the teacher.

Influence of Teachers' Methods

Differences in teaching methods have an effect on how children learn. One study showed that the necessary age for children to learn to read varies substantially. This study examined four different teaching methods for learning to read.[90] The study found that age, while a factor, was not the only determinant as to whether or how a child learns to read. Instead, this research suggested that an individual assessment of each child is necessary to tailor the curriculum (as opposed to applying a general curriculum that disregards individual aptitudes and difficulties).

OTHER FACTORS IN THE KINDERGARTEN ENVIRONMENT

The following section discusses three additional factors that appear in the literature that provide a broader context for understanding the issue of the appropriate age for children entering kindergarten: curriculum, testing, and delayed school entry.

Curriculum

Kindergarten curriculum has become more academic.[91] Some reasons cited for this additional academic rigor range from events such as the Soviets' launching of Sputnik in 1957, to the current demand for a well-educated American citizenry to compete in a global economy.

The increase of academics in kindergarten results from more children attending preschool where they received the kind of socialization or skills historically taught in kindergarten.[92] Although both preschool and kindergarten attendance are optional in California, children today are exposed earlier to socialization and behavior skills in preschools, unlike their counterparts 25 years ago who developed these skills in kindergarten or first grade.[93] Preschool attendance, coupled with educational television programs such as *Sesame Street*, have also caused kindergarten teachers to raise their expectations of what children should know when first entering school.[94] As a result, kindergarten, which once was designed to develop a child's social development and transition to the primary grades, has become much more academic.

The demand for more academics in kindergarten has resulted in mixed reactions from the research community, the educational community, and some parents. Each of these groups has a set of beliefs regarding early childhood development and learning, as well as a perspective as to when children are ready for school, and what are appropriate educational interventions.

The methods that teachers use when presenting academic concepts to those kindergarten children who may not be developmentally able to understand them also cause controversy. For example, presenting concepts through song, such as singing the ABCs, as opposed to a rigorous recitation of the alphabet may distinguish one method as appropriate and the other as inappropriate.

The National Association for the Education of Young Children has recently published guidelines entitled *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth Through Age 8.*[95] A recent survey of early childhood programs indicates that few early childhood classrooms have developmentally appropriate practices based on these guidelines.[96] The authors of the survey suggest the kindergarten teachers either do not understand or have not received training to incorporate the methods described by the guidelines.

In order to be an elementary grade teacher in California's public schools, a teacher must obtain a Multiple Subject credential. Although prospective elementary teachers may take courses in early childhood growth and development, they are not currently required for this credential. Consequently many teachers may not have been exposed to what is known about the development of children as well as how they best learn at their different stages of development.

This lack of preparation is particularly important for the younger children in kindergarten, who may need additional attention and assistance. There are only three teacher training programs in California that offer an emphasis on child growth and development.[97] Unless prospective kindergarten teachers attend one of these programs, they may not have the depth of understanding to work effectively with young children in kindergarten.

Moreover, given the substantial number of children in kindergarten with Limited-English Proficiency (LEP), it is important for *all* kindergarten teachers to be skilled in working with LEP children. Many teacher preparation programs offer a Cross-Cultural Language and Academic Development (CLAD) certificate as part of the Multiple Subject credential or a credentialed teacher may acquire the CLAD certificate later. According to the California Commission on Teacher Credentialing, there has been a recent trend toward requiring the CLAD certificate as part of the Multiple Subject credential; however, it is not yet universally required among all teacher training programs.

Emphasis on Testing

Testing is a widely used practice among educators to determine cognitive, social development, and motor abilities. Many of these tests provide reliable information

regarding various skill levels of children. If the proper tests are used, they can assist a teacher in curriculum planning or help to identify children who may need special services.

These tests fall into two general categories: developmental screening tests and school readiness tests. Each of these tests is used to measure different outcomes. The problem is not with the reliability of the test; rather, it is how the tests are used and for what purpose. Schools have become increasingly dependent on tests to determine a child's level of cognitive, social, and motor skills. The practice of administering such tests has raised the following concerns: 1) kindergarten children may not be developmentally mature enough to take a standardized test; 2) the uses of various tests may not be consistent with their intended purposes; 3) the reliability and validity of some tests may be questionable; and 4) the redirection of a child into a transitional kindergarten or special education class, just because he or she scored inadequately on a test, may not be justified.

Concerns Regarding Immaturity of Children Taking Tests. Standardized tests may be inappropriate because children may not have developed enough to yield accurate test results.[98] Studies show:

- Young children often do not yet understand directions given for a test, and are not ready to write on paper responses that are required by the test.[99]
- Examiners may have to make inferences as to whether a child understands a question or not, based on that child's verbal, perceptual, or motor abilities.[100]
- The questions themselves may require complex processing of information. Some young children may not possess this capability.[101]
- Some young children are not comfortable with the testing situation, which may inhibit their responses.[102]
- Four- and five-year-old children are erratic test takers, and when a test is given may bias its reliability and validity.[103]
- Young children's moods fluctuate from hour to hour.[104]

These findings suggest that testing results may be dubious, and not an accurate representation of a child's ability or readiness for school.

Concerns Regarding the Uses of Tests May Not Be Consistent with Their Intended Purposes. School districts employ two different types of tests for children at the kindergarten and first grade levels: developmental screening tests and school readiness tests. Developmental screening tests assess a child's developmental abilities and are used to predict future success.[105] Screening is an initial step, possibly leading to a more thorough assessment, that can identify abnormal development and can assist a child with a special placement (i.e. special education).[106]

School readiness tests measure curriculum-related skills that a child has already acquired. However, many school districts have substituted readiness tests for developmental screening tests. Critics assert that readiness tests should not be used to identify children who may need special services or intervention; they were not designed to predict a child's performance in school. Rather, readiness tests should be used as a means to facilitate curricular planning depending on each child's needs.[107]

Concerns Regarding the Reliability and Validity of the Gesell Tests. The literature reflects disagreement regarding the validity of widely used developmental screening tests known as the Gesell tests. These tests require a child to answer a variety of motor and visual questions, and in theory measure a child's level of maturity.[108]

Some studies have found that the Gesell tests can predict a child's success or failure in kindergarten[109] and a student's performance[110] in later years. Other studies have found mixed results. For example, one study found that the Gesell tests are more accurate with children who are considered "mature." However, for "immature" children, the tests are less accurate.[111]

Concerns Regarding Redirection of Children. The Gesell tests have been used to redirect children to alternative classes, such as special education, transitional kindergarten or pre-first grade classes. This usually occurs when children score poorly on the battery of tests. However, such redirections may be controversial.[112]

Those who subscribe to the Gesell tests believe that children may need more time to develop. In doing so, they recommend that children who do not score well on the tests should be retained in kindergarten, or placed in a transitional setting before being admitted to grade 1. However, because the tests may not be accurate for immature test takers, the redirection of children to these transitional settings may not be appropriate.[113]

Some Researchers Believe "no" Tests are Good Predictors.[114] According to Laurie Shepard,

> *Readiness testing is associated with the backdoor reinstitution of tracking, which we have observed in several different forms. When readiness tests or developmental tests are used to place "at-risk" children in 2-year kindergarten programs, the result is a group of children who are low performing on various language and psycho-motor tasks, on-average younger, and disproportionately from poor and minority backgrounds.*[115]

In other words, Shepard believes that the results of Gesell-like tests for "at risk" children may be inappropriate.

This is a highly contentious subject area that requires further investigation. Given the fact that the researchers themselves have different beliefs regarding child growth and development, these disputes may never fully be resolved.

The State Department of Education Reaction to this Controversy. Following the publication of their report *Here They Come: Ready or Not!*, the California Department of Education issued several program and legal advisories to local school districts regarding readiness and developmental testing. Two advisories sent to school districts discussed appropriate assessment practices for young children.[116] The CDE pointed to several court cases that determined the legality of testing for ability, standards, tracking, and racial segregation. The Department warned districts that the inappropriate use of assessments might lead to lawsuits against their school districts.

The California Department of Education does not collect information on local practices regarding assessments, retention,[117] or transitional kindergarten placements among California's kindergarten classes, and whether students are placed based on these tests. Therefore the extent to which such practices are used in kindergarten classrooms cannot be determined.

Delayed School Entry

Delayed school entry has been referred to as the "relatively quiet change in enrollment policies," which reflect parents' decisions to hold their children out of kindergarten for an additional year.[118] Thirty years ago, parents wanted their children to enter school as soon as possible. They pressured their state legislators to lower the entrance age for admission to kindergarten.[119] Today, many parents are delaying their children from enrolling in kindergarten for academic or athletic reasons. This may be due to the perceived or actual changes in kindergarten curriculum that require a more rigorous academic curriculum.

Another reason for delayed entry is that for some children who are not developmentally ready, only a "gift of time" will allow a child to naturally mature and develop, and therefore, be more ready for school.[120] In their study, *Better Late Than Never*, R.S. Moore and D.N. Moore, write:

> *Schools do not serve children or society effectively when they expect children to learn the basic skills before they are ready. Children who are successful and happy in a school situation experience satisfaction from, and are challenged by, learning. This excitement about learning is a natural result of being ready to learn.*[121]

The debate of who should be held back, and who should not has been a contentious issue for some time. Several studies indicate that delayed entrance into kindergarten is correlated with gender (boys are held back more often) and with higher socio-economic status (wealthier families are more likely to hold back their children).[122]

One study found that children who are held back tend to exhibit more behavioral problems.[123] Yet, these disadvantages do not appear until well after parents have made a decision to hold their children out of school, and usually manifest themselves after elementary school.[124]

The literature discusses four implications of delayed entrance into kindergarten:

1. The chronological range of children in an average kindergarten classroom expands from 12 to 24 months, which produces a significant age difference between the oldest and youngest children.

2. The emphasis of instruction is usually geared towards serving the needs of the older students and their parents. This may contribute to additional demands for a more academic kindergarten.

3. The prevalence of delayed entrance causes a disruption to schools' efforts in establishing equity in classrooms. For example, first-graders who are barely six years of age are compared to others who may be seven and a half years of age. These inequities manifest themselves when younger children have to compete with their older counterparts.

4. Children who are held back, and are the oldest in their grade, may have a higher propensity for not graduating from high school. This may be a function of drop-outs having been retained in grade earlier in their academic career, or a function of simply being delayed at the beginning of their schooling.[125]

The California Department of Education does not collect data relative to children's entry age into kindergarten. Therefore, there is no current method for determining the number of children whose parents delayed their entry into school or the number of students retained in grade.

CALIFORNIA INITIATIVES THAT MAY BE AFFECTED BY A CHANGE IN SCHOOL ENTRANCE-AGE POLICY

There are several programs currently underway in California that may be affected by a change in law regarding when children can legally enter school. Following is an overview of these programs, and how they may be affected by a date change:

CalWORKS

CalWORKS is California's response to the federal welfare reform. In order to meet the federally-imposed employment targets, California must put roughly 500,000 welfare recipients to work over the next few years, over 60 percent of whom are single mothers with at least one preschool-age child.[126] A change in entrance age requirements will likely increase the demand for childcare services outside the home for these families. Children who are born between September 1 and December 2 may require an additional year of childcare since they will not meet the minimum age requirements for admission to kindergarten.

Class Size Reduction Initiative (CSR)

Class Size Reduction Initiative (CSR) was first implemented for the 1996-97 school year and is targeted to four classes serving kindergarten through grade 3. Schools who participate in the program must reduce their class sizes for grades 1 and 2, and can choose additional classes including kindergarten and/or grade 3. Schools must limit class enrollments to no more than 20 students for the four grades selected.

One obstacle for the CSR has been finding an adequate number of skilled teachers. Many new teachers hired in response to the CSR, and who are teaching in the primary grades, were given Multiple Subject Emergency Permits (MSEPs), with the expectation that they would need to complete their coursework and obtain a teaching credential. The number of MSEPs issued has more than doubled since the implementation of the Class Size Reduction Initiative.[127]

A change in the current law to delay entry of roughly one-quarter of currently eligible students would lessen the demand for teachers initially. However, problems will continue regarding whether teachers have developed appropriate teaching skills that are necessary for children in kindergarten, as well as those in the next grades.

Year-Round Schools

Year-round schools have operated in California since the turn of the century. However, in 1977, legislation was enacted to specify the operating parameters for year-round programs. School districts currently offer both a single- and multi-track operating system.[128] According to figures from the National Association for Year-Round Education, as of November, 1997, California had 1,189 public elementary year-round schools (K-8)[129] with student enrollments of 948,612.[130] The majority of these programs begin in July of each year. Thus, almost 34,000 children could be affected by a change in law that moves the qualifying entrance age to September 1.[131]

Standardized Testing and Reporting (STAR) Program

Standardized Testing and Reporting (STAR) Program was signed into law by Governor Wilson on October 8, 1997. The STAR program requires all public school districts in California to use a single standardized test, and to test each student in grades 2 through 11 by May 15 of each fiscal year, beginning with 1997-98. In response to the law authorizing the STAR program, the State Superintendent made a recommendation for the statewide standardized test to the State Board of Education in October, 1997. The State Board adopted the Stanford Achievement Test (SAT 9) on November 14, 1997.

With a testing program in place, it is more likely that the State can gauge the effect of entrance age on children's performance. Further, it is also likely that the State will be able to determine how California's older entrants may perform in comparison to younger children in the same grade.

The Commission for the Establishment of Academic Content and Performance Standards

The Commission was authorized by AB 265 (Chapter 975, Statutes of 1995), SB 430 (Chapter 69, Statutes of 1996), and AB 2105 (Chapter 920, Statutes of 1996) to review existing academic standards, and develop academic and performance standards related to language arts and mathematics subjects for public schools maintaining kindergarten and grades 1 through 12. The Commission has developed and proposed standards to the State Board of Education, which has adopted them with modifications.

Among the adopted academic and performance standards, there are some that apply to kindergarten. The implications of a more rigorous curriculum for all primary grades may further redefine what constitutes "ready" for kindergarten or first grade (in that not all children attend kindergarten).

Universal Preschool Task Force

The State Superintendent of Public Instruction has recently convened a Universal Preschool Task Force to address the feasibility of providing publicly funded preschool for all three- and four-year olds. The Task Force will present recommendations to the State Superintendent of Public Instruction by January, 1998, and a final report will be available by February, 1998. This initiative has particular importance for children entering kindergarten. Universal preschool may diminish issues related to differences in age among children in kindergarten, and may further impact the curricular content of kindergarten.

APPENDIX A: KINDERGARTEN: STATE CHARACTERISTICS

Kindergarten: State Characteristics

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ECS Information Clearinghouse

STATE CHARACTERISTICS: KINDERGARTEN
April 1997

State	Compulsory Age	Kindergarten Entrance Age	District Offering	Pupil Attendance
AL	7	5 on or before 9/1	M*	P*
AK	7	5 on or before 8/15	P	P
AS	6	5 by 9/1	M	M
AZ	6	5 before 9/1	M (1)	P
AR	5	5 on or before 8/1	M	M (2)
CA	6	5 on or before 12/2	P	P
CO	7	LEA option	P	P
CT	7	5 by 1/1	M	P
DE	5	5 on or before 8/31	M	M
DC	5	5 by 12/31	M	M
FL	6	5 by 9/1	M	M (3)
GA	7	5 by 9/1	M	P
HI	6	5 by 12/31	P	P
ID	7	5 by 9/1	P	P
IL	7	5 on or before 9/1	M (4)	P
IN	7	5 by 6/1	M	P
IA	6	5 on or before 9/15	M	P
KS	7	5 on or before 8/31	M	P
KY	6	5 on or before 10/1	M	P
LA	7	5 by September 30 (5)	M	M (6)
ME	7	5 on or before 10/15	M (7)	P
MD	5	5 by 12/31	M	M
MA	6	LEA option	M	P

MI	6	5 on or before 12/1	P	P
MN	7	5 by 9/1	M	P
MS	6	5 on or before 9/1	M	P
MO	7	5 as of 7/1 (8)	P	P
MT	7	5 on or before 9/10	M	P
NE	7	5 on or before 10/15	M (9)	P
NV	7	5 by 9/30	M	P
NH	6	LEA option	P	P
NJ	6	LEA option	P	P
NM	5	5 by 9/1	M	P
NY	6	5 on or before 12/1	M	P
NC	7	5 on or before 10/16	M	P
ND (10)	7	5 as of midnight 8/31	P	P
OH	6	5 on or before 9/30	M	M
OK	5	5 on or before 9/1	M	M
OR	7	5 on or before 9/1	P	P
PA	8	LEA option	P	P
PR	5	5 by 8/1	M	M
RI	6	5 on or before 12/31	M	M
SC	5	5 on or before 9/1	M	M (11)
SD	6	5 on or before 9/1	M	P
TN	7	5 on or before 9/30	M	M
TX	6	5 on or before 9/1	M	P
UT	6	5 on or before 9/2	M	P
VT	7	5 on or before 1/1 (12)	M	P
VI	5	5 (13)	M	M
VA	5	5 on or before 9/30	M	M
WA	8	5 on or before midnight 8/31	P (14)	P
WV	6	5 prior to 9/1	M	P (15)
WI	6	5 on or before 9/1	M	P
WY	7	5 on or before 9/15	P	P

*P = Permissive; M = Mandatory

NOTES:

(1) Each school district shall establish a kindergarten program in Arizona, unless the governing board of the school district files an exemption claim with the department of education.

(2) In Arkansas, pupil attendance is mandatory, but parents can request a waiver.

(3) In Florida, the compulsory school age is 6; however, successful completion of kindergarten is mandatory and if it is not successfully completed a child may be older than 6 when entering first grade.

(4) Illinois permits districts to offer full-day kindergarten programs and receive full state aid.

(5) The kindergarten entrance age for the Orleans Parish, Louisiana School District is 5 by December 30.

(6) Louisiana specifies mandatory half-day attendance or test for first-grade readiness.

(7) In Maine, schools shall either operate a kindergarten program or otherwise provide for students to participate in such a program.

(8) As of July 1, 1997, the kindergarten entrance age in Missouri is 5 before August 1. In addition, beginning with the 1997-98 school year, St. Louis and Kansas City may require that child is 5 on or before any date between August 1 and October 1.

(9) Kindergarten is required for accreditation of districts in Nebraska, thus all LEAs offer it.

(10) In North Dakota, children with special talents/abilities born between 9/1 and 12/31 can be enrolled early, upon passing State Department of Education approved screening tests.

(11) The South Carolina Education Improvement Act of 1984 specifies that "5-year-olds shall attend kindergarten" but parents may obtain a waiver from this requirement.

(12) In Vermont, a school district may establish and enforce a regulation which requires that students admitted to kindergarten have attained the age of five on or before any date between August 31 and January 1.

(13) In order to be eligible for kindergarten in the Virgin Islands, a child must reach the age of 5 during the calendar year in which they enter kindergarten.

(14) LEAs in Washington can permit early entrance up to 3 months.

(15) Kindergarten attendance in West Virginia is permissive, but prior to entrance into the first grade each child must successfully complete kindergarten. Under extraordinary circumstances a child may pass a county school board approved readiness test in lieu of kindergarten attendance.

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APPENDIX B: SUMMARY OF ENTRANCE-AGE STUDIES

Ahr (1967) studied the effects of early entrance to school on student performance. From 1959 to1963, children whose birthdates fell between December 2 and December 31 applied to an early admission program. On average, during this seven-year period, there were 30 applicants, of which about eight were accepted. This study's sample therefore consisted of 56 children who enrolled in District 68. Teachers gave subjective ratings for the early entrants according to four areas of development: intellectual, social, emotional, and physical/motor development. The teachers rated 97 percent of the early entrants as average or above with respect to intellectual ability compared to their older peers in the top classes. The teachers' ratings of social, emotional, and physical/motor indicated that early entrants were average as compared to their classmates.

Anastas and Reinherz (1984) investigated whether there were gender differences that related to adjustment and learning problems of predominately white, working class school children. The researchers followed the cohort of 488 children from screening prior to school entry in 1977 through the fourth grade in 1982. The researchers found few gender differences in behavioral and emotional adjustment, which they attributed to the fact that the study relied most heavily on parents' assessments. The parents' ratings were consistent with the amount of psychological services rendered among the children. Teachers' ratings, however, showed more differences in gender than did the parents' ratings, which revealed that they view boys and girls as less similar than do parents. Given the boys' early disadvantages (in the areas of information processing and aggression), they received more years of special education during the study period and they predominated in receiving multiple years of psychological services. Girls who also lagged behind in achievement received, on average, little special educational help, which led these researchers to suggest that schools have assisted boys more than girls who have educational problems.

Baer (1958) studied 146 children in order to determine whether children who enter school prior to age five are too immature to be in school. This researcher matched 73 children whose birthdates were in November and December (younger cohort) with 73 children whose birthdates were in January and February of the prior year(older cohort). The researcher compared the two groups of children during the eleventh year of school based on the following characteristics: physical size at the time of the study, grade level attained, the number of problems marked on the Science Research Associates Youth Inventory, scores on the Guilford-Zimmerman Temperament Survey, marks in elementary and high school subjects, achievement test scores, teacher rating on personal traits, and number of absences.[132] This researcher found the following results: 1) the over-age children, from kindergarten through tenth grade, obtained higher subject grades, significantly higher scores on achievement tests in reading, arithmetic, and social studies, received higher personal traits ratings from teachers, and had more success in maintaining a regular progression from one grade level to the next; 2) there were greater differences in terms of gender than age for three of the teachers' personal trait ratings; 3) the differences in age tended to decrease over time; and 4) even though the younger children did not perform as well as the older classmates, most of them made average school progress (i.e.,

received average marks in subjects, average scores on achievement tests, average ratings from teachers on personal traits, and did not indicate more significant problems on the problem inventory than the older children). This researcher noted, however, that the selected sample of students only included those children with an average IQ of about 111.[133]

Bellisimo, Sacks, and Mergendoller (1995) examined the prevalence of delaying children's entry into kindergarten over time in Marin County, California. The researchers selected 1,704 children in 1988-89 and 1,869 children in 1991-92 from 30 schools.[134] The researchers findings included: 1) a significant decline, between 1988 and 1991, in the frequency of holding children out of kindergarten;[135] 2) socio-economic status (SES) of the parents was positively correlated with holding out boys, but not girls, in both 1988 and 1991; 3) schools with higher SES overall had a higher percentage of boys' delayed entrance; 4) a significantly greater percentage of parents in 1988 were concerned with the appropriateness of kindergarten classroom for their children than in 1991; and 5) there was no identified relationship between holding out and teacher reports of change in kindergarten expectations, practices, and enrollment policies.

Bigelow (1934) studied a total of 127 children to determine the relationship between the children's age of entrance into school, their intelligence, and achievement by the fourth grade. The researcher selected four groups of children,[136] and used the Modern School Achievement Test to determine their achievement in the fourth grade. Of the total number of children, 88 had entered school before they were six years old, and 39 had entered school when they were between six years and six years and four months old. Based on the children's retention rates, their scores on the Kuhlmann-Anderson Intelligence Tests, and their scores on the Modern School Achievement Test, the researcher concluded the following: 1) children who are between six years and six years four months with an intelligence quotient (IQ) of 110 or more are practically certain to succeed in school; 2) children who are younger than six years with an IQ of 120 or more will probably succeed; 3) children who are younger than six years with an IQ score of below 110 will have a small chance of success; 4) children who are younger than six years as well as those who are between six years and six years four months with IQ's of 100-109 inclusive, will have a fair chance of succeeding; 5) children who are younger than six years with a mental age of six years and ten months or more will practically be certain to succeed; 6) children who are six years and six years four months with an equal mental age or more have a good chance of success; 7) children who are younger than six years and four months with a mental age of below six years have practically no chance of success; and 8) children who are younger than six years with a mental age of between six years and six years and seven months, or children who are between six years and six years four months with a mental age of between six years and six years three months inclusive have some chance of succeeding if they are sufficiently mature physically, socially, and emotionally.[137]

Byrd, Weitzman, and Auinger (1997) used parental reports from a nationally representative sample of 9,079 children to investigate whether students who were old for their grade[138] have higher rates of reported behavior problems[139] and to determine whether behavior problems are associated with children who were retained in a grade. The

researchers found that 26 percent of children aged 7-17 in the country are old for their grade. Of these children, the researchers found that being old for grade is more common for children with the following characteristics: males (31 percent), Blacks (33 percent), Hispanics (32 percent), living in single-parent households (31 percent), living in poverty (43 percent), and whose mothers had a low educational attainment (42 percent) (654). In terms of reported behavior problems, the researchers discovered that being retained in a grade was positively correlated with extreme Behavior Problem Index (BPI) scores. For instance, they reported that for the old for grade cohort, 19 percent of grade-retained and 12 percent of non-retained had extreme BPI scores; and for the not old for grade cohort, 17 percent of the retained and 7 percent of the non-retained had extreme BPI scores (654). The researchers interpret the results of this study as there being possible latent disadvantages for children to be older than their classmates. Unfortunately, as they point out, these disadvantages do not appear until well after parents have made a decision to hold their children out of school.

Carter (1956) selected 100 students as a sampling for comparing the scholastic achievement of underage (n=50) and normal age (n=50) children in elementary school subjects from grades two through six.[140] The researcher plotted a profile of each matched pair, which presented the achievement in arithmetic, spelling, reading, and English and the mean grade equivalent scores for sixth graders. The researcher computed T-tests for determining statistically significant differences of sixth grade underage and normal age boys, and underage and normal age girls. Based on the results, the researcher concluded the following: 1) given the same school experiences, the chronologically older children have an advantage in terms of academic achievement than younger children; 2) the degree of scholastic achievement that children obtain from the first achievement test tends to generally remain constant throughout the elementary grades; 3) the underage students who scored lower on the first achievement test were not able to overcome their inferior ranking throughout their elementary school years; 4) chronological age affects more underage boys than underage girls in regard to academic achievement; 5) for some underage children, other factors than intelligence and chronological age operated to produce equal or superior academic achievement to normal age children; 6) similarly, for normal age children there were other factors than intelligence and chronological age operating that retarded normal academic achievement; 7) there were less differences in some subjects (i.e., arithmetic) between underage girls and normal age girls, which the researcher attributed to subject areas most effectively taught.[141]

DeMeis and Stearns (1992) researched the relationship between children's chronological age and academic and social performance. The researchers grouped the sample of 1,676 children into five groups, with the first group further divided into two, for a total of six groups.[142] The researchers completed Kendall's tau analyses to determine whether there was a correlation between the proportion of students that were referred to the various programs and services and their date of birth. Based on their studies, the researchers determined that children who are younger do not experience more academic or social difficulties than their older classmates do. Specifically, the researchers found that children who were referred for psycho-educational evaluation corresponded to children's age. Furthermore, they found that younger children qualified at the same rate as their older

counterparts for gifted placement, even though a greater number of older children had qualified for this program. Younger children were more frequently placed in a pre-first grade than their older counterparts, a trend that the researchers attribute to teachers' apparently perceived or actual age differences in the children. The researchers uncovered that although age was not a factor for referring children for evaluation, it was a consideration for placing children into a transitional classroom. Moreover, the researchers' study revealed that gender is a more significant variable than age, since boys were referred more often than girls were to the Primary Mental Health Project.

Dickinson and Larson (1963) studied the effects of chronological age at the time of entering school with later achievement. The researchers selected 480 fourth grade students by a stratified random sample in order to control for kindergarten experience and other school experience. The sample did not include retained students. The researchers used two approaches to determine the influence of chronological age on achievement.[143] Based on the results of mean composite scores, the researchers found that the younger fourth of the class scored significantly lower than the remainder of the class. They suggest that since the older children scored higher and that these differences continued to exist in the fourth grade, this could point to what they described as a snowballing effect. That is, the early differences that existed may magnify as the child ages. For a second part of the study, the researchers divided the children into four groups, with three-month intervals. There were no significant differences in mean scores of achievement even though the scores increased with the increase in age.

Dietz and Wilson (1985) examined school records for 117 children to determine whether any differences exist in age at the time of school entry and gender when compared with later school achievement and retention patterns. The researchers grouped the children into three categories, with a mean age of 62 months, 66 months, and 71 months at the time of school entry. The researchers found no significant differences among the three age groups that related to school readiness test scores, gender, for second grade math, or composite scores. They found some gender differences in reading (boys scored lower than girls in reading and composite scores), and again in the fourth grade where boys had lower composite scores. The researchers therefore suggest that there is little or no effect on academic achievement that can be attributed to the birthdate of a child.

DiPasquale, Moule, and Flewelling (1980) studied psychological assessment referrals made for children to determine whether a child's birthdate was correlated with the number of referrals. The sample included 552 children ranging from kindergarten through grade 13, with a 2.4 to 1 ratio of boys to girls. Based on their survey, the researchers found: 1) an existing birthdate effect for the primary grades (kindergarten through grade 3); 2) the birthdate effect resulted from academic rather than behavioral (i.e., social or emotional) concerns; and 3) the birthdate effect was evident only in the group of boys corresponding to the primary grades. The researchers' interpretation of the data reflect that although there is a birthdate effect for boys as they enter school, young boys generally "catch up" to their female counterparts or "outgrow" their problems by the third grade.

Gullo (1991) studied 4,539 children to determine the effects of the number of preschool years, gender and "at-risk" status (defined by using the Cooperative Preschool Inventory) on children's readiness for first grade (determined by using the Metropolitan Readiness Test, MRT). The children were divided by the number of preschool years as follows: 104 started preschool at age three (K3), 1,234 started preschool at age four (K4), and 3,201 started school at age five (K5). Children who started at ages three and four scored higher than children who started at age five on the MRT did. For children who started school at age three, there were no differences between the scores of the at-risk and not-at-risk children, whereas there were differences for the children who started school later (i.e., K4 and K5 children).

Gullo and Burton (1992) studied 4,539 children in order to examine the effects of children's age of entry, number of years of preschool, and sex on academic readiness at the end of kindergarten. Of the total number of children, 104 began public school at age 3, 1,234 began at age 4, and 3,201 began at age 5. The researchers used the Cooperative Preschool Inventory to determine at-risk status and the Metropolitan Readiness Test (MRT) for assessing first-grade readiness. When controlling for risk-status, the researchers, using a regression analysis, found that sex did not have a significant amount of variance, but that entry age and the number of preschool years did. Analysis of the covariance indicated that children who had entered preschool at age 3 and 4 scored higher on the MRT than did children who entered at age 5. For children entering preschool at age 3, there were no differences found on achievement scores between the oldest and the youngest. For children entering at ages 4 and 5, the older children scored higher than the younger peers did.

Hall (1963) studied the effects of entrance age on gender and achievement, by examining retention data for pupil's school records in the 1959-60 school year. Of the 801 retained pupils, Hall grouped them according to their age at entrance in the first grade.[144] To determine the effects of entrance age on achievement, Hall studied the achievement scores of randomly selected third graders (607) and sixth graders (556). His findings included: 1) girls achieved at a higher level than boys, particularly in reading and language arts; 2) overage boys and girls achieved at a higher level than the underage of the same gender; 3) the underage boys achieved at a lower level than any other group; and 4) the differences in achievement increased from the third to the sixth grade.[145]

Kinard and Reinherz (1986) studied a sample consisting of 467 children to examine the longitudinal effects of school entrance age on school performance and adjustment by comparing six birthdate groups, which represented two months of the school calendar year. The study design consisted of: 1) surveying parents with questionnaires at their children's preschool screening and at the end of third grade; 2) surveying teachers with questionnaires at the end of kindergarten and at the end of third grade; 3) administering standardized tests to the children for cognitive ability at preschool screening as well as academic aptitude and achievement tests at fourth grade; and 4) collecting information on the use of school-based services from school records for each school year, beginning with kindergarten to grade 4. The results of this study indicated a positive correlation of age groups and early cognitive ability (i.e., kindergarten), with the oldest age group scoring

the highest and the youngest age group scoring the lowest. Information processing[146] had a significant correlation with all subsequent measures of school performance and most measures of school adjustment. However, when the researchers controlled for this variable (i.e., information processing), they found that there were no differences among the entrance age groups on the measures of school performance or adjustment throughout the duration of the study (i.e., kindergarten, third grade or fourth grade). Moreover, the researchers found no significant differences in cognitive abilities between the older and younger children on later school performance and adjustment. This finding suggests that the earlier detected differences were due to the influence on information processing skills. The researchers were not able to uncover any gender differences that they could attribute to age; however, they did acknowledge that boys received more special (academic) services than girls did. Interestingly, the researchers pointed out that teachers perceived far more differences between boys and girls than did parents. Teachers judged boys to be more problematic than girls with respect to peer relations, hostility, withdrawal, and productivity.[147] The only gender difference that parents noted was that boys had more difficulty with paying attention than girls pay.

May and Welch (1986) studied the relationship between month of birth and gender with their performance on the Gesell Screening Test and the Stanford Achievement Test. The researchers classified 152 children, in grades 3 through 6 (73 males and 79 females), into four groups.[148] The researchers' results indicated the Gesell measures showed initial performance differences related to the birthdates of the children, but that these differences diminished with time as the children aged. It seemed to these researchers that the younger children were catching up to the test performance of their older counterparts. Furthermore, the researchers were unable to decipher any consistent pattern of test performance that related to gender. They found that girls scored significantly higher on only one measure and there were no significant interaction's to report between gender and the birthdate groups.

Miller and Norris (1967) studied 135 students in the fourth and fifth grades to examine the effects of school entry age with sex, psychological referrals, test scores (using the Gates Reading Readiness Tests and the Metropolitan Achievement Tests), and a sociometric scale test (using a modified Tuddenham Reputation Test). The researchers identified the children by the following entry categories: normal, early and late. Results of this study showed that the early entrants were significantly less ready than normal on three of the six group readiness measures, and that the mean scores of the early entrants were the lowest of the three on all readiness variables. However, at the end of four years, the mean measurement of the early entrants did not significantly differ from the normal entrants, and that the classmate ratings of school adjustment at the beginning of fifth grade showed no differences between the early and normal entrants. Furthermore, the initial differences that favored the normal entrants tended to disappear by the end of the second grade. The researchers found that the late entrants were retained and referred for psychological study more frequently than normal and early entrants do. The late entrants were rated as less happy and outgoing than the other groups of children.

Shepard, Graue, and Catto (1989) examined birthdate and gender data from 19 Colorado school districts to determine the hold-out patterns among children entering kindergarten. The study sample included 31,408 children, representing approximately two-thirds of the Colorado kindergarten population. Based on the results of this study, the researchers found that: 1) holding out occurred in 60 percent (12 of the 19) of the school districts; 2) in 44 percent of the schools in their sample, 10 percent or more of boys had been held out; 3) in 30 percent of the schools, at least 10 percent of the girls had been held out; and 4) holding out was significantly related to middle and higher socio-economic status.

Spi, Cupp, and Parke (1995) conducted two studies to determine the effect of school entrance age on social acceptance and self-perceptions of kindergarten and first grade pupils. For Study 1, the researchers assessed the social acceptance and competence of 476 kindergarten and first grade children, using peer nominations and ratings, teacher ratings, and report card grades. In Study 2, the researchers interviewed 116 kindergarten and first grade children to assess their perceptions of school adjustment, loneliness at school, cognitive and physical competence, and peer and maternal acceptance.

Results from Study 1 indicate that the peer ratings showed some social disadvantage for the youngest quartile in kindergarten, for they received slightly more ratings for being disliked and aggressive than the oldest quartile. By first grade, the differences disappeared, which the researchers attribute to socialization into the school setting. The youngest quartile received fewer ratings for being well-liked and prosocial in kindergarten than the oldest quartile, and this difference increased in the first grade ratings. Thus, the results describe a situation of possible initial difficulties with social skills for the youngest children beginning kindergarten; however, these difficulties do not cause the youngest children to be rejected by their peers and they are largely overcome by the first grade. With respect to the teachers' ratings, the researchers found perceived differences attributable to the children's ages, but these differences were not consistent with the report card grades they assigned. There was a positive correlation between children's ages and the teachers' ratings of popularity and prosocial behavior for both kindergarten and first grade teachers.

Results from Study 2 indicate that boys were rated as more introverted and dependent, whereas girls were rated as more task-focused and considerate of others.

Uphoff, Gilmore, and Huber (1986) summarized several studies that identified summer children as disadvantaged. In one study, Uphoff studied 278 pupils in kindergarten through grade 6. For the purposes of this study, Uphoff compared retention rates for summer children[149] (who numbered 63 of the total, or 22.6 percent) and those summer children who were held out of school for an additional year (who numbered 26 or 9.35 percent). The researchers found that the summer children comprised 75 percent of children who were retained in a grade, whereas none of the summer children whose parents had held them out for an additional year had been retained. The authors summarized another study conducted by Gilmore who screened potential kindergarten children for parochial schools and then returned seven years later to review their school records. Seventy summer children[150] were still enrolled in the school system. Of these children, 35 were summer children who had enrolled when they were eligible and 35 were held out of school for an additional year. Of the 35 not-held-back summer children, 15 were males and 20 were females; and of the held back summer children, there were 26 males and 9 females. Four of the not-held-back summer children had been retained (three boys and one girl) or 11.4 percent, and one (boy), or 2.86 percent, who had been held out of school were retained. These studies, the authors conclude, demonstrate that holding summer children out of school for an additional year lessens the risk of failure (defined as retention in a grade).

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[8] B. Spodek, O.N. Saracho, and M.D. Davis (1991). *Foundations of Early Childhood Education – Teaching Three-, Four-, and Five-Year Old Children.* New Jersey: Prentice Hall, Inc., Second Edition.

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[13] B. Spodek, O.N. Saracho, and M.D. Davis (1991). *Foundations of Early Childhood Education – Teaching Three-, Four-, and Five-Year Old Children.* New Jersey: Prentice Hall, Inc., Second Edition, 25.

[14] *For example, to help children learn about sounds, Maria Montessori created a set of boxes. All the boxes looked alike, but each contained a different kind of material. By shaking each box, a child would produce a unique sound. The sound made by one box could be compared with the sounds made by other boxes. The boxes could be ordered on the basis of the loudness of the sound. They could also be matched with boxes in another set. Similar activities were devised to train the other senses: touch, sight, smell, and taste. Each activity was matched with a set of special materials to be used by children in specific ways. Children could use the self-corrective materials independently.* The Secretary of State of Connecticut for the Connecticut State Board of Education (1988). A Guide to Program Development for Kindergarten, 5.

[15] Ibid., 5.

[16] Ibid., 5.

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[18] B. Spodek, O.N. Saracho, and M.D. Davis (1991). *Foundations of Early Childhood Education – Teaching Three-, Four-, and Five-Year Old Children.* New Jersey: Prentice Hall, Inc., Second Edition, 23.

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[22] The Education Commission of the States, "State Characteristics: Kindergarten," Last modified: 11/7/97.

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[24] Chart 1 represents 45 state policies on entrance age; the remaining five states do not have a state policy and entrance age is at the discretion of a local school district.

[25] The source for the Statewide Indicators is *The California Child Care Portfolio*, 1997, whose data are from the following sources: 1990 Census of Population and Housing STF-3; U.S. Bureau of the Census. CPR, P70-53 "Who's Minding Our Preschoolers?" March 1996; U.S. Bureau of the Census. CPR, P70-30 "Who's Minding the Kids?" Fall 1988; State of California, Population Projections: July 1996; 1996 Regional Market Rate Survey of California's Child Care Providers: Mean Rates for Child Care; and R&R provider and caller databases.

[26] B. Fuller, C. Coonerty, F. Kipnis, and Y. Choong (1997). *An Unfair Head Start: California Families Face Gaps in Preschool and Child Care Availability.* Paper presented at the November 3-5, 1997, Universal Preschool Task Force Meeting at the University of California at Los Angeles, 4.

[27] This conservative estimate is calculated by dividing the total projected population number of children aged five (n=598,840) into a quarter, which reflects the three-month interval change as proposed by AB 85 (equals 149,710 children), and then dividing this figure by half (equals 74,855 children, representing the children who are in child care outside the home). These calculations are based on the assumption that there is an even distribution of births throughout the year, and that the projected number of children aged five will remain constant. The Price Letter Population Projections data are from the Demographic Research Unit of the Department of Finance, October 1997.

[28] The California Department of Education does not collect information relating to the characteristics of private school students.

[29] This estimate is calculated using the October 1997 Population Projections of the Department of Finance for five-year olds (n=598,840) and the total number of children enrolled in public and private schools (n=543,608). This estimate does not try to capture the number of four-year old children who enter kindergarten early or the number of six-year old children whose parents hold them out for an additional year.

[30] October 1996 Language Census, Educational Demographics Unit, California Department of Education, (n=167,087).

[31] It should be noted that these "labels" of child development theories are taken from the research community, whereas many practicing educators in the field of early childhood development may not use or be familiar with them.

[32] The Secretary of State of Connecticut for the Connecticut State Board of Education (1988), 6.

[33] Ibid., 11.

[34] Ibid., 11.

[35] M.E. Graue (1993). *Ready for What? Constructing Meanings of Readiness for Kindergarten.* Albany: State University of New York Press.

[36] The Secretary of the State of Connecticut for the Connecticut State Board of Education (1988), 12.

[37] Ibid., 12.

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[39] M.E. Graue (1993). *Ready for What? Constructing Meanings of Readiness for Kindergarten.* Albany: State University of New York Press, 7.

[40] Ibid., 7.

[41] The Secretary of State of Connecticut for the Connecticut State Board of Education (1988), 12.

[42] Ibid., 12.

[43] M.E. Graue (1993), 8.

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[45] P. Engel (1989). *Assessment of Kindergartners' Readiness for First Grade: Policies and Practices of Industrialized Nations*. Paper presented at the Annual Assessment Conference of the Education Commission of the States, Boulder, Colorado.

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[48] G.R. Gredler (1972). *Ethical & Legal Factors in the Practice of School Psychology*. Proceeding of the First Annual Conference in School Psychology, Temple University, Philadelphia, PA; and G.R. Gredler (1978). "A Look at Some Important Factors in Assessing Readiness for School," *Journal of Learning Disabilities*, 11, (5), 284-290.

[49] A technical summary of each study reviewed appears as Appendix B.

[50] Supporting this view are the following research studies: Ahr (1967); DeMeis and Stearns (1992); Dietz and Wilson (1985); Gullo (1991); and Gullo and Burton (1992).

[51] Ahr (1967).

[52] DeMeis and Stearns (1992) and Dietz and Wilson (1985).

[53] Ahr (1967).

[54] DeMeis and Stearns (1992).

[55] In support of this view are studies by Bigelow (1934); Baer (1958); Carter (1956); Dickinson and Larson (1963); DiPasquale, Moule, and Flewelling (1980); Gullo and Burton (1992); Hall (1963); Kinard and Reinherz (1986); May and Welch (1986); Miller and Norris (1967); Spi, Cupp, and Parke (1995); Uphoff, Gilmore, and Huber (1986).

[56]Bigelow (1934); Baer (1958); Carter (1956); Dickinson and Larson (1963); Hall (1963); Kinard and Reinherz (1986); May and Welch (1986).

[57] Baer (1958).

[58] DiPasquale, Moule, and Flewelling (1980).

[59] Spi, Cupp, and Parke (1995).

[60] Among the research studies that found a continuing birthdate effect include Baer (1958); Carter (1956); Dickinson and Larson (1963); and Hall (1963).

[61] Baer (1958); Carter (1956); Dickinson and Larson (1963); and Hall (1963).

[62] Dickinson and Larson (1963).

[63] Carter (1956) and Hall (1963).

[64] Baer (1958).

[65] Carter (1956).

[66] Baer (1958).

[67] Among the research studies that found that there was no long-term birthdate effect include Ahr (1967); DiPasquale, Moule, and Flewelling (1980); Kinard and Reinherz (1986); May and Welch (1986); Miller and Norris (1967); and Spi, Cupp, and Parke (1995).

[68] DiPasquale, Moule, and Flewelling (1980); Kinard and Reinherz (1986); May and Welch (1986); and Miller and Norris (1967).

[69] DiPasquale, Moule, and Flewelling (1980), 237.

[70] Kinard and Reinherz (1986), 367. The researchers define information processing as representing the child's body awareness and control, visual-perceptual motor skills, and language skills.

[71] Spi, Cupp, and Parke, (1995).

[72] The research studies that found that gender may influence children's performance include Anastas and Reinherz (1984); Carter (1956); DeMeis and Stearns (1992); Dietz and Wilson (1985); DiPasquale, Moule, and Flewelling (1980); and Hall, 1963.

[73] Anastas and Reinherz (1984); Carter (1956); Dietz and Wilson (1985); DiPasquale, Moule, and Flewelling (1980);and Hall (1963).

[74] Anastas and Reinherz (1984).

[75] DiPasquale, Moule, and Flewelling (1980).

[76] DeMeis and Stearns (1992).

[77] G.R. Gredler (1980). The Birthdate Effect: Fact or Artifact? *Journal of Learning Disabilities*, 13 (5), 240.

[78] L.B. Ames (1967). *Is Your Child in the Wrong Grade?* New York: Harper & Row.

[79] According to R.S. Moore and D.N. Moore (1975) in their study *Better Late Than Early*, they stated "During the early years, girls are commonly six to nine months or more ahead of boys in maturity. So they are more nearly ready for school. Their superior early achievement is one of the clearest proofs of the importance of readiness in school. It also raises many questions. For example, why do most states set mandatory entrance ages at the same levels for both boys and girls? We can find no sound reason except expediency. If children were left out of school longer and the gap between the sexes were allowed to close, would it then be logical to have boys and girls of the same age in the same grades? We believe so." New York: Reader's Digest Press, 98.

[80] Gullo and Burton (1992) and Kinard and Reinherz (1986).

[81] G.R. Gredler (1972). *Ethical & Legal Factors in the Practice of School Psychology*. Proceeding of the First Annual Conference in School Psychology, Temple University, Philadelphia, PA.; and G.R. Gredler (1980). The Birthdate Effect: Fact or Artifact? *Journal of Learning Disabilities*, 13 (5), 206.

[82] Gullo (1991) and Gullo and Burton (1992).

[83] The research studies that found that teachers' perceptions may be an influencing factor include Ahr (1967); Anastas and Reinherz (1984); Baer (1958); DeMeis and Stearns (1992); DiPasquale, Moule, and Flewelling (1980); Miller and Norris (1967); and Spi, Cupp, and Parke (1995).

[84] Ahr (1967); Baer (1958); and Spi, Cupp, and Parke (1995).

[85] Anastas and Reinherz (1984).

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[88] DiPasquale, Moule, and Flewelling (1980) and Miller and Norris (1967).

[89] Miller and Norris (1967).

[90] A.I. Gates (1937). "The Necessary Mental Age for Beginning Reading," *The Elementary School Journal*, 37, 497-508.

[91] The reference to increased academic content in kindergarten curriculum is found in the following studies: Shepard and Smith (1988); Willis (1993); Shepard, Graue, and Catto (1989); Karweit (1988); Bredekamp and Shepard (1989); Freeman (1990); Bellisimo, Sacks, Mergendoller (1995); Uphoff (1990); Soderman (1984); Uphoff, Gilmore, and Huber (1986); Grant (1991); Coletta (1991); Bryant and Clifford (1992); and Charlesworth (1989).

[92] M.E. Graue (1993). *Ready for What? Constructing Meanings of Readiness for Kindergarten*. Albany: State University of New York Press, 252.

[93] Ibid., 252.

[94] L.A. Shepard (1990). "Readiness Testing in Local School Districts: An Analysis of Backdoor Policies," *Politics of Education Association Yearbook*.

[95] S. Bredekamp and C. Copple (Eds.) (1997) *Developmentally Appropriate Practice in Early Childhood Programs*. Rev. ed. Washington, D.C.: National Association for the Education of Young Children.

[96] L. Dunn and S. Kontos (1997). "What Have We Learned About Developmentally Appropriate Practice?" *Young Children*, July 1997, 4.

[97] According to the Marilyn Errett of the California Commission on Teacher Credentialing (CCTC), there are three teacher preparation programs that offer an emphasis in early childhood growth and development. These include programs at Sonoma State University, Fresno State University, and Long Beach State University.

[98] A. Coletta (1991). *What's Best for Kids - A Guide to Developmentally Appropriate Practices for Teachers and Parents of Children Age 4-8*. Rosemont, NJ: Modern Learning Press, 15; R.E. Reeve and I.J. Holt (1987). "Children and School Entry Decisions." In A. Thomas & J. Grimes (Eds.). *Children's Needs: Psychological Perspectives*. Kent, OH: National Association of School Psychologists, 499-505; and S.J. Meisels (1994). "Designing Meaningful Measurements for Early Childhood," in B.L. Mallory and R.S. New (Eds.). *Diversity & Developmentally Appropriate Practices: Challenges for Early Childhood Education*. New York: Teachers College Press, 211-2.

[99] A. Coletta (1991), 177.

[100] S.J. Meisels (1994). "Designing Meaningful Measurements for Early Childhood," in B.L. Mallory and R.S. New (Eds.). *Diversity & Developmentally Appropriate Practices: Challenges for Early Childhood Education*. New York: Teachers College Press, 211-2.

[101] Ibid., 212.

[102] Ibid., 212.

[103] M.C. Ellwein, D.J. Walsh, G.M. Eads, and A. Miller (1991). "Using Readiness Tests to Route Kindergarten Students: The Snarled Intersection of Psychometrics, Policy, and Practice," *Educational Evaluation and Policy Analysis*, Summer, 13 (2), 160.

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[105] S.J. Meisels (1987). Uses and Abuses of Developmental Screening and School Readiness Testing, *Young Children*, 42 (2), 5.

[106] M.E. Graue and L.A. Shepard (1989). Predictive Validity of the Gesell School Readiness Tests, *Early Childhood Research Quarterly*, 4, 303.

[107] S.J. Meisels (1987). Uses and Abuses of Developmental Screening and School Readiness Testing, *Young Children*, 42 (2), 5.

[108] L.B. Ames and F.L. Ilg (1964). "Gesell Behavior Tests as Predictive of Later Grade Placement," *Perceptual and Motor Skills*, 19, 719.

[109] Ibid., 720.

[110] C. Wood, S. Powell, and R.C. Knight (1984). "Predicting School Readiness: The Validity of Developmental Age," *Journal of Learning Disabilities*, 17 (1), 8-11.

[111] D.C.May and E. Welch (1986). "Screening for School Readiness: The Influence of Birthdate and Sex," *Psychology in the Schools*, 23, 104.

[112] M.E. Graue and L.A. Shepard (1989). "Predictive Validity of the Gesell School Readiness Tests," *Early Childhood Research Quarterly*, 4, 314.

[113] Ibid., 314.

[114] L.A. Shepard (1990). "Readiness Testing in Local School Districts: An Analysis of Backdoor Policies," *Politics of Education Association Yearbook*, 171.

[115] L.A. Shepard (1997). "Children not Ready to Learn? The Invalidity of School Readiness Testing," *Psychology in the Schools*, 34 (2), 91.

[116] California Department of Education FSB: 88/9-10 (June 12, 1989); FSB 92/93-D1 (July 1992); LO:2-92 (November 30, 1992).

[117] The most recent report that the California Department of Education issued regarding retention was in 1991, entitled *Beyond Retention: A Study of Retention Rates, Practices, and Successful Alternatives in California*, Program Evaluation and Research Division.

[118] S.J. Meisels (1992). "Doing Harm by Doing Good: Iatrogenic Effects of Early Childhood Enrollment and Promotion Policies," *Early Childhood Research Quarterly*, 7, 165.

[119] R.V. Hall (1963). Does Entrance Age Affect Achievement? *The Elementary School Journal*, 63, 392.

[120] L.B. Ames (1967). *Is Your Child in the Wrong Grade?* New York: Harper & Row, 17.

[121] R.S. Moore and D.N. Moore (1975). *Better Late Than Early*. New York: Reader's Digest Press, 88.

[122] L.A. Shepard, M.E. Graue, and S.F. Catto (1989). "Delayed Entry into Kindergarten and Escalation of Academic Demands." Paper presented in the symposium, "Kindergarten Programs for At-Risk Students: Policy Implications of Recent Research," at the annual meeting of the American Educational Research Association, San Francisco, March; and Y. Bellisimo, C.H. Sacks, and J.R. Mergendoller (1995). "Changes Over Time in Kindergarten Holding Out: Parent and School Contexts," *Early Childhood Research Quarterly*, 10, 205-222.

[123] R.S.Byrd, M. Weitzman, and P. Auinger (1997). "Increased Behavior Problems Associated with Delayed School Entry and Delayed School Progress," *Pediatrics*, 100 (4), 654-661. The researchers define behavior problems as scoring less than 90th percentile on the standardized Behavior Problem Index (BPI).

[124] Ibid., 659.

[125] S.J. Meisels (1992). "Doing Harm by Doing Good: Iatrogenic Effects of Early Childhood Enrollment and Promotion Policies," *Early Childhood Research Quarterly*, 7, 166-7.

[126] B. Fuller, C. Coonerty, F. Kipnis, and Y. Choong (1997). "An Unfair Head Start: California Families Face Gaps in Preschool and Child Care Availability." Paper presented at the Universal Preschool Task Force, November 3-5, 1997, at the University of California at Los Angeles, 5.

[127] In fiscal year 1995-96, the California Commission on Teacher Credentialing (CCTC) issued 6,042 Multiple Subject Emergency Permits (MSEPs); and in fiscal year 1996-97, the CCTC issued 12,367 (MSEPs). Source: California Commission on Teacher Credentialing.

[128] Single-Track is defined as "all students and teachers in the school attend classes and have vacations on the same schedule, whereas Multi-Track is defined as dividing the student body into several groups. The instructional and vacation periods of each track are staggered so that at least one track (group) is on vacation at all times. This plan is often utilized in overcrowded schools. Depending on the calendar selected and the student body size, 20-33 percent of the students are always on vacation, creating the opportunity to expand existing facility utilization by 25-50 percent." Excerpted from: "Why Year-Round Education? A Rationale." Charles Ballinger, Executive Director, National Association of Year-Round Education.

[129] This figure includes charter schools that operate a Year-Round Calendar.

[130] Most public elementary schools are K-5 or K-6. However, in those cases where there is not a separate middle school through Grade 8, the elementary data reflect a K-8 attendance. The same case is true for private school data.

[131] This rough estimate is calculated by dividing the total number of public elementary students enrolled in year-round programs (n=948,612) and dividing that by seven (n=135,516), which reflects a possible number of grades between kindergarten and sixth grade since most elementary schools are K-5 or K-6, and then taking a quarter of those children (n=33,879).

[132] C.J. Baer (1958). "The School Progress and Adjustment of Underage and Overage Students," *Journal of Educational Psychology*, 49 (1), 17.

[133] Ibid., 19.

[134] The sample included 861 boys and 843 girls in 1988-89 and 975 and 894 girls in 1991-92.

[135] In 1988, approximately 19.3 percent of boys and 9.1 percent of girls were overage in kindergarten; whereas in 1991, 11.4 percent boys and 3.7 percent girls were overage in kindergarten.

[136] The researcher selected four groups on the basis of the following: 1) Group 1 consisted of 50 children who were in grade four and had entered grade one before they were six years of age; 2) Group 2 consisted of 25 children who were in grade four, had entered grade one before they were six years of age, and had repeated one grade; 3) Group 3 consisted of 13 children who were in grade three, had entered grade one before they were six years of age, and had repeated one grade; and 4) Group 4 consisted of 39 children who were in grade four and had entered grade one when they were between six and six and four months inclusive.

[137] E.B. Bigelow (1934). "School Progress of Under-Age Children," *The Elementary School Journal*, 35(3), 192.

[138] The researchers define old-for-grade as those children whose parents delayed their school entry (not grade retained) or those who had delayed school progress (were grade retained).

[139] The researchers define behavior problems as scoring less than 90th percentile on the standardized Behavior Problem Index (BPI).

[140] Carter used the following criteria for sample selection: 1) the pupils enrolled in an Austin elementary school in September 1947; 2) the pupils attended the Austin elementary schools throughout the elementary grades and had complete records of Metropolitan Achievement Tests; 3) half of the pupils selected were six years old or over on September 1, 1947 and the other half were less than six years old on that date; 4) the pupils were equally divided between the sexes; and the underage pupils were matched with normal age pupils of the same sex and equal IQ as measure by the New California Short Form Test of Mental Maturity at the primary level (92).

[141] L.B. Carter (1956). "The Effect of Early School Entrance on the Scholastic Achievement of Elementary School Children in the Austin Public Schools," *Journal of Educational Research*, 50, 102-103.

[142] The researchers grouped the children according to the following: Group 1 comprised of all psycho-educational referrals, and these referrals were further split according to academic referrals (Group 1A, n=535) and social/behavioral referrals (Group 1SB, n=164); Group 2 were students placed in Primary Mental Health Project (n=149); Group 3 were students referred for gifted evaluation but without being placed in the gifted program (n=423); Group 4 consisted of students who met the criteria for the gifted program (n=171); and Group 5 (n=234) were students that had been placed in a pre-first class.

[143] The first approach was to compare the younger fourth of the class to the remainder of the class. The second approach was to divide the class into four groups on the basis of age, and then compare the younger fourth to each of the remaining three groups (of fourths) (492).

[144] Hall classified pupils who were more than six years and six months of age at the time of entrance into first grade as overage, and those pupils who were less than six years six months of age at entrance as underage.

[145] R.V. Hall (1963). "Does Entrance Age Affect Achievement?" *The Elementary School Journal*, 63, 394.

[146] The authors define information processing as representing the child's body awareness and control, visual-perceptual motor skills, and language skills (367).

[147] E.M. Kinard and H. Reinherz (1986). "Birthdate Effects on School Performance and Adjustment: A Longitudinal Study," *Journal of Educational Research*, 79 (6), 371.

[148] The researchers classified the children according to the month of birth into the four following groups: Group 1 (December, January, or February birthdates), Group 2 (March, April, or May birthdates), Group 3 (June, July, August birthdates), and Group 4 (September, October, November birthdates).

[149] Uphoff defined summer children as those children born between June 1 and October 15.

[150] Gilmore defined summer children as those children born between June 1 and September 30.

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READINESS FOR KINDERGARTEN: WHAT DOES IT MEAN?

A Review of Literature in Response to a Request by Assemblymember Kerry Mazzoni

By

Patricia L. de Cos