

The Effects of On-time, Delayed and Early Kindergarten Enrollment on Children's Mathematics Achievement: Differences by Gender, Race, and Family Socio-economic Status*

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Abstract

This study was an examination of the effect of delayed, early, and on-time kindergarten enrollment on children's kindergarten mathematics achievement. Central for this study was to explore if the relationship between the kindergarten enrollment status and mathematics achievement varies by children's gender, race, and family SES status. It used a nationally representative sample of ECLS-K data collected in the United States of America. On average, findings of this study suggested that children with delayed enrollment in kindergarten had stronger mathematics skills than children with on-time enrollment in kindergarten, who had stronger skills than children with early enrollment. However, this pattern of relationship appeared to be different for children from lower socioeconomic background and children from racial minority groups by their gender.

Key Words

Kindergarten Mathematics Achievement, Age of Kindergarten Entry, Socio-Demographic Factors.

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The age at which children should enter kindergarten has been of interest to policy makers, educators, parents, and researchers for many years (e.g., Ames, 1967; Crosser, 1991; Grau, 1993; Gray, 1985; Moore & Moore, 1975; Stipek & Byler, 2001). In most states across the U.S., children are legally eligible to enter kindergarten when they turn five years of age on or before a cutoff date (Education Commission of States [ECS], 2004; Jamieson, Currie, & Martinez, 2001; Siegel & Hanson, 1991). However, the date by which a child must be aged five to begin kindergarten varies greatly (ECS; Gray; Moore, Moore, Willey, Moore, & Kordenbrock, 1980; Stipek, 2002). In addition, in the past 50 years, most states and school districts have pulled the cutoff dates up, so that children enter kindergarten at an older age (Grau; Gredler, 1992; Siegel & Hanson; Stipek). Parents also delay their children's enrollment in kindergarten at will, and teachers and professionals recommend postponing enrollment of children who have late birthdates in their cohort to give the "gift of time" to be ready for school (Grau & DiPerna, 2000; Stipek). These actions are

based on the presumed likelihood that when children enter school older, they will show more competencies in school tasks, and will be more likely to succeed in school (Grau, Grau, Kroeger, & Brown 2003; Stipek). However, there is little evidence to support this assumption in, and most studies have not considered that the effects of kindergarten enrollment on student achievement may differ by children's race, family socio-economic status (SES) and gender. This study addressed this issue by focusing on how delayed, early or on-time kindergarten enrollment may affect children's kindergarten mathematics achievement by gender, family SES, and racial background.

Effect of Kindergarten Entrance Age on Achievement

Studies comparing school outcomes of children with delayed and on-time enrollment in kindergarten have yielded inconsistent findings. Using a large-scale data, West, Meek, and Hurst (2000) found significant differences in school performance between children with delayed and on-time enrollment in kindergarten in 1993, yet in 1995 there was no such difference. Small-scale studies have also yielded mixed results. Some studies have found that children with delayed, on-time, and early kindergarten enrollment do not differ significantly in their mathematics achievement in the first (Morrison, Griffith, & Alberts, 1997), and third grade (Grau & DiPerna, 2000). On the other hand, in a study by Cameron and Wilson (1990), children with delayed enrollment scored higher than the youngest group in their cohort, while the older and medial group of children among children with on-time enrollment scored higher than children with delayed enrollment in the second grade. Yet, this difference was not evident in the fourth grade. A study comparing children with delayed enrollment with children who were determined immature according to a developmental readiness test, but placed in kindergarten (referred as overplaced children in the study) found that, these two groups did not differ in their mathematics scores in the second-, third-, fourth- and sixth-grade (May & Welch, 1984). More recent studies (e.g., Grau & DiPerna; Morrison et al.; Stipek & Byler, 2001) have found that children with delayed kindergarten enrollment performed at the same level, or less well, than children with on-time kindergarten enrollment.

There is some evidence that younger children (those who enter kindergarten at age four or who turn five a few months before the cutoff date to

enter kindergarten) do not perform academically as well as older children do (Breznitz & Teltsch, 1989; Campbell, 1985; Davis, Trimble, & Vincent, 1980; Freberg, 1991; Langer, Kalk & Searls, 1984; Morrison et al., 1997; Stipek & Byler, 2001; West et al., 2000; Zill & West, 2001). Older children have more advanced academic skills at the beginning of the school year (Morrison et al.; West et al.; Zill & West), and they surpass their younger peers in mathematics (Breznitz & Teltsch; Morrison et al.). Another line of research has shown no significant age differences in performance on academic tests (Buntaine & Constenbader, 1997; Grau & DiPerna, 2000; Stipek & Byler). While some studies have reported that the difference between younger and older children in the early grades decline or disappear in later elementary school years (Bickel, Zigmond, & Strayhorn, 1991; Davis et al.; Jones & Mandeville, 1990; Grau & DiPerna; Langer et al.; Morrison et al.; Stipek & Byler), some have shown that the difference between older and younger children remained significant, although younger children gained as much as, or more than, the older children (Breznitz & Teltsch; Campbell).

Studies have also looked at the schooling effect versus the age effect, and compared same age children who were in different grades. Findings from these studies have suggested that younger first graders outperform their age mates who are a year behind them in school (Crone & Whitehurst, 1999; Morrison et al., 1997; Stipek & Byler, 2001), suggesting that schooling effects are larger than the age effects in mathematics (Grau & DiPerna, 2000; Morrison et al.).

The Mediating Effect of Socio-demographic Variables on Achievement

Several studies have reported that academic achievement of children varies by socio-demographic factors, such as gender, race, and family socioeconomic status (Bickel et al., 1991; Davis et al., 1980; Dietz & Wilson, 1985; Jones & Mandeville, 1990; Langer et al., 1984), and that the effect of age of entry is minimal when socio-demographic variables are taken into account (Bickel et al.). In comparisons of the academic achievement of younger and older children, gender has been found to be an important moderating variable (Davis et al.; Dietz & Wilson; Langer et al.; Sheehan, Cryan, Wiechel, & Bandy, 1991). In some cases, the effect of gender was larger than the effect of age (i.e., Sheehan et

al.). Children from low SES families begin school with lower mathematics abilities than do children from higher SES families (Lee & Burkam, 2002), and they show slower growth (Bickel et al.). Children from racial minority groups perform weaker in academic tests than do Caucasian children (Eamon, 2002; Shannon & Bylsma, 2002). Thus, prior research collectively shows that the effect for age could be mediated by socio-demographic factors.

Theoretical Framework

Small- and large-scaled studies have shown that approximately 4% to 27% of children experience delayed enrollment in kindergarten at any point in time (e.g., Bellisimo, Sacks, & Mergengoller, 1995; Brent, May, & Kundert, 1996; Cosden, Zimmer, & Tuss, 1993; Grau & DiPerna, 2000; Jamieson et al., 2001; Walsh, Ellwein, Eads, & Miller, 1991; Zill & West, 2001). Children whose birthdays are slightly before the cutoff date, and males, are more likely to have their enrollment into kindergarten delayed (Brent et al., 1996; Cosden et al.; Grau & DiPerna; Walsh et al.; Zill, Loomis, & West, 1998). Children from racial minority groups are more likely to be enrolled in kindergarten early (Dobkin & Ferreira, 2010), whereas children from White racial group more likely to have their kindergarten enrollment delayed (Dobkin & Ferreira; Grau & DiPerna; Zill et al.). Delayed enrollment is more likely for children from middle- and high-income families than it is for children from low-income families (Bellisimo et al.; Dobkin & Ferreira; Grau & DiPerna; Stipek & Byler, 2001; Walsh et al.). In addition, parents' perceptions about whether their children are ready for kindergarten or not influence their decisions (Grau & DiPerna; Holloway, 2003; Stipek, 2002). These studies show that the time when children are enrolled in kindergarten is a function of several factors.

In general, policy and practices concerning kindergarten age of entry have been shaped by how parents, educators, and policy makers have perceived school readiness (McGill-Franzen, 1993). School readiness is a widely used term, yet there is very little consensus on what it means (Lin, Lawrence, & Gorrell, 2003; McGill-Franzen; Wesley & Buysse, 2003), or the best way to achieve it (McGill-Franzen). A broad definition of school readiness refers to the child's abilities to effectively learn and adapt to school (Lewit & Baker, 1995). Okon and Wilgocka-Okon (1973) define school readiness as "the child's attainment of a degree of physical, intellectual, and social development sufficient to enable him to fulfill school requirements and assimilate

curriculum content" (p. 7). There have been two influential school readiness perspectives: maturational and chronological age.

Maturational Perspective: The maturational perspective (e.g., Ames, 1967; Moore & Moore, 1975) argues that school readiness is a threshold that the child should reach before starting school. The maturational point of view claims that "the older is better until the children achieve that prerequisite level of development that is required for them to succeed in school" (Stipek, 2002, p. 4). Thus, if children are not ready, they should be given an extra year to mature so that they are developmentally ready for the formal classroom structure and instruction (Brent et al., 1996; Grau & DiPerna, 2000; Siegel & Hanson, 1991). Also, taking children away from their family and home environment before they are mature enough for the structure and academics of the classroom may lead to undesirable consequences such as social, emotional and physical problems and school failure (Hammond, 1986; Gredler, 1992; Morrison et al., 1997; Siegel & Hanson, 1991). From this perspective, since children vary in their development (Bracey, 1989), chronological age is not the adequate criterion for deciding when to enter school. The chronological age may be used when there is no way to evaluate the child's readiness (Freisen, 1984). In that case, the child should be fully five years old for girls and five and half years old for boys (Ames), highlighting the gender differences in developmental readiness for school, with boys maturing later than girls. A child is considered to be ready to start formal school learning processes when the optimum coordination occurs among the child's development in the affective, psychomotor, perceptual, and cognitive behaviors (Ames; Moore & Moore). In other words, three variables need to be considered before enrolling the child in school: chronological age, physiological age, and behavioral age (Ames).

Chronological Age Perspective: Proponents of chronological age perspective prefer school experience over maturation. They propose that it should be the educational system's responsibility to be ready to meet the individual child's need; not the child's responsibility to be ready for school (Grau & DiPerna, 2000; National Association for the Education of Young Children [NAEYC], 1995). Moreover, development is not evenly paced (Stipek, 2002) and children vary in their rate and patterns of development (Zill et al., 1998). Therefore, early childhood educators need to meet the children where they are (Grau et al., 2003), and adapt for individual

differences (Bredekamp, 1987). This point of view is opposed to delaying children's entrance to kindergarten, and using readiness tests to determine the eligibility of children to enter kindergarten (i.e., Bredekamp; Brent et al., 1996; Grau et al., 2003; Gredler, 1992; Langer et al., 1984; NAEYC; Shepard & Smith, 1989; Stipek) and argues that chronological age is the only non-discriminatory entry criterion (National Association of Early Childhood Specialists, 2001).

Although there are inconsistent results, previous studies suggest that younger children are disadvantaged in academic subjects, and are, therefore, more likely to fail, and children with delayed enrollment or older children have an academic advantage. However, care should be taken when interpreting findings from studies comparing children's delayed and on-time enrollment. First, children who are held out of school do not represent a random sample. Furthermore, the factors that influence parents' decisions, or child qualities, also affect the children's school performance (Stipek, 2002). If, for example more economically advantaged children were held out, as reported in several studies (e.g., Bellisimo, et al., 1995; Grau & DiPerna, 2000; Stipek & Byler, 2001; Walsh, et al., 1991), and if these delayed and economically more advantaged children have higher achievement, age of entry would possibly only have a slight effect in comparison to the effect of SES on academic achievement (Bickel et al., 1989). In other words, since most studies indicated that holding out is more common among high SES families; the finding that delayed enrolled children have an academic advantage over younger children would be false. Therefore, the finding would be a function of SES, because although studies have used SES, race, and gender as control variables, they did not compare the effects of kindergarten enrollment within each SES and racial group.

It seems, therefore, that while attempts have been made to control for the effect of those family factors when studying kindergarten age of entry, it is unclear how delayed, early, or on-time enrollment would influence children's achievement within each racial and socioeconomic groups. The purpose of this research study was to explore (1) whether children's mathematics achievement differs by kindergarten enrollment status, and (2) how kindergarten enrollment status interacts with children's gender, race, and family SES in predicting kindergarten mathematics achievement.

Method

Data Overview

The data for the study came from the Early Childhood Longitudinal Study: Kindergarten Cohort (ECLS-K), 1998-1999. The ECLS-K, collected in the United States of America, was a longitudinal survey study which captured information about children's development and their family, home, and school environment longitudinally from kindergarten to 8th grade. In this study, the data collected in the fall and the spring of the kindergarten year (1998-1999) waves were used. Data were collected through the use of direct child assessments, parent interviews, and self-administered questionnaires completed by teachers, and school administrators.

Study Sample

ECLS-K used a multistage sampling procedure and obtained a nationally representative sample of 22,266 children who were in kindergarten in 1998-1999 school year. Excluding children who were repeating kindergarten, and who had missing values on mathematics achievements, and gender, race, family SES, and kindergarten enrollment status resulted in 15,779 children who were in kindergarten for the first time in 1998-99 school year.

The study sample characteristics by kindergarten enrollment status are presented in Table 1. The last pair of columns and the first row show the sample sizes and percentages for the entire sample. The study sample included similar percentages of male and female children; approximately 59% were White, 16% Black, 18% Hispanic, 2% Asian, and 4.5% from other racial groups. Percentages of children from higher SES families were slightly higher than those of children from lower SES families. Most of the children (91.5%) were enrolled in kindergarten on time, 6.7% were delayed and 1.7% were enrolled early.

Variables

Outcome Variables: The outcome variables used in the study were fall and spring mathematics scores. Mathematics assessment batteries measured the following proficiencies: (1) Identifying some one-digit numerals, recognizing geometric shapes, and one-to-one counting up to ten objects; (2) reading all one-digit numerals, counting beyond ten, recognizing a sequence of patterns, and using nonstandard units of length to compare objects; (3) reading two-digit numerals, recognizing the next number

in a sequence, identifying the ordinal position of an object, and solving a simple word problem; (4) solving simple addition and subtraction problems; and (5) solving simple multiplication and division problems and recognizing more complex number patterns. An assessor administered mathematics assessment to children one on one. Children were provided manipulatives, and paper and pencil when necessary (National Center for Education Statistics [NCES], 2001).

Mathematics scores calibrated by the Item Response Theory Model (IRT) were used for the study. The *c1mscale* and *c2mscale* variables provided IRT scores for the fall and spring, respectively. Using IRT allowed modeling the mathematics achievement of kindergarteners across the kindergarten year. Reliability measures for the fall and spring kindergarten mathematics assessment batteries were .92 and .94, respectively (NCES, 2001).

Grouping Variables: Children's kindergarten enrollment status, gender, race, and family SES were used as grouping variables. Children's gender data were gathered from a composite gender variable (*gender*) created by NCES staff.

Kindergarten enrollment status was captured using the variable *p1whenen*. In the fall parent interviews, parents reported whether their children were enrolled in kindergarten when they were eligible, or whether their enrolments in kindergarten were delayed, or it was early.

The race variable included eight categories of race:

(1) White, non-Hispanic, (2) Black or African American, non-Hispanic, (3) Hispanic, race specified, (4) Hispanic, race not specified, (5) Asian, (6) Native Hawaiian, other Pacific Islander, (7) American Indian or Alaska Native, and (8) more than one race, non-Hispanic. Hispanic, race specified and Hispanic, race not specified were collapsed as "Hispanic". Native Hawaiian, other Pacific Islander, American Indian or Alaska Native, and more than one race, non-Hispanic were collapsed as Other. Thus, five race categories were created: White, Black, Hispanic, Asian, and Other.

A composite SES variable (*wksesq5*) used to gather information about children's family SES. NCES staff derived the measure from the household income (*wkincome*), mother's or female guardian's education (*wkmomed*), father's or male guardian's education (*wkdaded*), mother's or female guardian's occupation prestige score (*wkmomscr*), and father's or male guardians occupation prestige score (*wkdadscr*). Family SES information was in five quintiles. The first quintile represented the lowest SES and the fifth quintile represented the highest SES.

Data Analyses

Data analyses began with describing percentages of children with on-time, delayed, and early kindergarten enrollments. Chi Square statistics were computed to determine whether the proportions of children enrolled in kindergarten on time, delayed, and early were significantly different across the so-

Table 1.

Weighted Sample Size and Percentages of Children Enrolled Kindergarten on Time, Delayed and Early

| | On-time | | Delayed | | Early | | All | |
|-------------------|-----------|------|---------|-----|--------|-----|-----------|------|
| | N | % | N | % | N | % | N | % |
| All | 3,100,416 | 91.5 | 227,841 | 6.7 | 58,827 | 1.7 | 3,387,084 | |
| <i>Gender</i> | | | | | | | | |
| Female | 1,544,591 | 92.6 | 87,928 | 5.3 | 34,854 | 2.1 | 1,667,373 | 49.2 |
| Male | 1,555,826 | 90.5 | 139,912 | 8.1 | 23,973 | 1.4 | 1,719,711 | 50.8 |
| <i>Race</i> | | | | | | | | |
| White | 1,826,956 | 90.9 | 156,382 | 7.8 | 26,716 | 1.3 | 2,010,054 | 59.3 |
| Black | 502,067 | 93.0 | 26,394 | 4.9 | 11,343 | 2.1 | 539,804 | 15.9 |
| Hispanic | 566,747 | 92.5 | 30,149 | 4.9 | 15,983 | 2.6 | 612,879 | 18.1 |
| Asian | 64,528 | 91.5 | 3,890 | 5.5 | 2,068 | 2.9 | 70,486 | 2.1 |
| Other | 140,118 | 91.1 | 11,026 | 7.2 | 2,717 | 1.8 | 153,861 | 4.5 |
| <i>Family SES</i> | | | | | | | | |
| 1st Quintile | 581,024 | 91.4 | 36,953 | 5.8 | 17,553 | 2.8 | 635,531 | 18.8 |
| 2nd Quintile | 622,204 | 93.0 | 37,042 | 5.5 | 9,664 | 1.4 | 668,910 | 19.7 |
| 3rd Quintile | 634,096 | 91.7 | 49,743 | 7.2 | 7,398 | 1.1 | 691,237 | 20.4 |
| 4th Quintile | 631,457 | 91.5 | 48,114 | 7.0 | 10,473 | 1.5 | 690,044 | 20.4 |
| 5th Quintile | 631,635 | 90.1 | 55,988 | 8.0 | 13,739 | 2.0 | 701,361 | 20.7 |

Table 2.

Means and standard deviations for mathematics achievement of children at the beginning and end of kindergarten by their gender, race, SES and kindergarten enrollment status

| | Beginning of Kindergarten | | End of Kindergarten | |
|---------------------------------------|---------------------------|------|---------------------|------|
| | M | SD | M | SD |
| All | 19.26 | 7.26 | 27.46 | 8.79 |
| <i>Gender</i> | | | | |
| Female | 19.25 | 6.84 | 27.78 | 8.39 |
| Male | 19.26 | 7.64 | 28.07 | 9.25 |
| <i>Race</i> | | | | |
| White | 21.05 | 7.37 | 29.98 | 8.57 |
| Black | 16.55 | 5.45 | 23.82 | 7.54 |
| Hispanic | 15.84 | 6.00 | 24.06 | 8.08 |
| Asian | 22.57 | 8.60 | 31.52 | 9.20 |
| Other | 17.40 | 6.70 | 26.07 | 8.31 |
| <i>Family SES</i> | | | | |
| 1st Quintile | 14.53 | 4.96 | 21.98 | 7.27 |
| 2nd Quintile | 17.22 | 5.91 | 25.53 | 7.87 |
| 3rd Quintile | 19.05 | 6.29 | 27.57 | 7.81 |
| 4th Quintile | 20.93 | 6.83 | 29.56 | 8.17 |
| 5th Quintile | 24.04 | 8.00 | 33.09 | 8.68 |
| <i>Kindergarten Enrollment Status</i> | | | | |
| On-time | 19.13 | 7.16 | 27.85 | 8.76 |
| Delayed | 21.38 | 8.34 | 29.60 | 9.50 |
| Early | 17.48 | 6.57 | 25.88 | 8.95 |

cio-demographic characteristics. Then, means and standard deviations of kindergarten mathematics achievement of children by their gender, race, family SES, and kindergarten enrollment status were provided. Cohen's *d* for unequal sample sizes were computed. Then, a 3 X 2 X 5 X 5 (kindergarten enrollment status X gender X race X SES) Analysis of Variance (ANOVA) was conducted for beginning and end of kindergarten. All analyses were conducted by weighting the data using a weight variable (BYCW0) created by NCES staff to generalize the findings to the population.

Results

Descriptive Analyses

Initial analyses included profiling the characteristics of children who were enrolled in kindergarten early, delayed, or on time. Chi Square statistics were computed if there were significant differences in the percent of children with early, delayed, and on-time enrollment by socio-demographic characteristics. It was found that kindergarten enrollment status of children varied significantly by gender, race and family SES. Table 1 shows the numbers and percentages of children by gender, race, and

family SES for delayed, on-time, and early enrolled children.

The first pair of the columns in Table 1 shows the numbers and percentages of children whose kindergarten enrollments were on time within the gender, racial group, and SES group. The second and third pairs of columns present the same statistics for children with delayed and early kindergarten enrollment, respectively. As shown in the second and third pairs of column in Table 1, a significantly greater percentage of males than females were enrolled in kindergarten delayed (5.1% and 8.3%, respectively), whereas a higher percentage of females were enrolled in kindergarten on time (92.6% versus 90.5%), and early (2.1% versus 1.4%; $X^2=13221.97$, $p<.001$). The percent of children with delayed enrollment was significantly higher for White racial group (7.8%) than it was for those from a Black (4.9%), Hispanic (4.9%), or Asian background (5.5%; $X^2=15075.18$, $p<.001$). Percents of delayed enrolled children from higher SES families were higher than the percentages of those from lower SES families ($X^2=10789.29$, $p<.001$).

Table 2 presents the means and standard deviations for the beginning and end of kindergarten mathe-

matics achievement by children's gender, race, family SES, and kindergarten enrollment status. The average mathematics scores were $M=19.26$ at the beginning, and $M=27.46$ at the end of kindergarten. A visual examination of the table shows that, in general, White and Asian children, children from the higher SES levels, and children whose enrollments in kindergarten were delayed scored higher than did their peers.

Inferential Statistics Results

The ANOVA results showed that kindergarten students' mathematics achievement were significantly different by their kindergarten enrollment status, gender, race, and family SES. The variables in the model explained 24% of the variance at the beginning of kindergarten mathematics, and 22% of the variance at the end of kindergarten mathematics.

The beginning and end of kindergarten mathematics achievement of early enrolled children were significantly lower than the mathematics achievement of on-time enrolled children (Cohen's $d=.14$ for the beginning and end of kindergarten achievement), whose achievements were lower than delayed enrolled children (Cohen's $d=.11$ for the beginning and end of kindergarten achievement). Females scored higher than males at the beginning, $F(1, 3,386,938) = 25.62, p<.001$; however, their performance was similar by the end of kindergarten. White children scored significantly higher than Black (Cohen's $d=.56$ for the beginning of kindergarten, and Cohen's $d=.63$ for the end of kindergarten), Hispanic (Cohen's $d=.62$ for the beginning of kindergarten, and Cohen's $d=.58$ for the end of kindergarten), and Other children (Cohen's $d=.51$ for the beginning of kindergarten, and Cohen's $d=.46$ for the end of kindergarten). Children from the fifth SES quintile scored significantly higher than those from the first (Cohen's $d=2.40$ for the beginning of kindergarten, and Cohen's $d=2.28$ for the end of kindergarten), second (Cohen's $d=.156$ for the beginning of kindergarten, and Cohen's $d=1.45$ for the end of kindergarten), third (Cohen's $d=1.10$ for the beginning of kindergarten, and Cohen's $d=1.05$ for the end of kindergarten), and fourth quintiles (Cohen's $d=.66$ for the beginning and end of kindergarten).

In addition to the main effects of gender, race, SES, and kindergarten enrollment status, the interaction effects of children's socio-demographic characteristics by kindergarten enrollment status were examined. All two, three- and four-ways of interaction effects on the beginning and end of kindergarten mathematics achievement for gender, race, SES and kindergarten enrollment were significant. Figures 1-12 present those interaction effects graphically.

Figure 1 depicts the gender X kindergarten enrollment interaction, $F(2, 3,386,938) = 410.91, p<.001$; $F(2, 3,386,938) = 388.77, p<.001$, for the beginning and end of kindergarten, respectively). Female children with delayed enrollment performed better than those with on-time and early enrollment. On the other hand, while delayed, on-time, and early enrolled male children started almost at the same point in the fall, male children with on-time enrollment appeared to show more gains than those with delayed and early enrollment by the end of kindergarten.

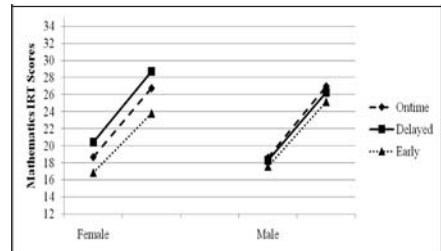


Figure 1. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children by Their Kindergarten Enrollment Status

Race X kindergarten enrollment interaction was significant in both beginning ($F(8, 3,386,938) = 308.12, p<.001$), and end of kindergarten ($F(8, 3,386,938) = 200.37, p<.001$). As presented in Figure 2, the differences between delayed and on-time, and on-time and early enrolled children, in favor of the delayed and on-time enrolled children, respectively, were more apparent for White children, followed by Hispanic and Other children. On-time enrolled children scored higher than delayed enrolled children among Asian children. Discrepancies by delayed, early, or on-time enrollment were not evident for Black children.

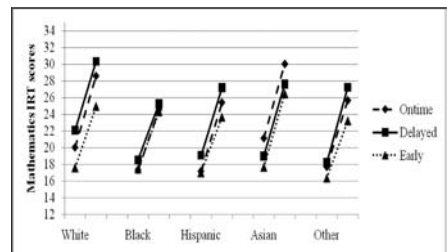


Figure 2. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Children by Their Kindergarten Enrollment Status and Race

The SES X kindergarten enrollment interaction effects were found for the beginning ($F(8, 3,386,938) = 57,892, p < .001$), and the end of kindergarten ($F(8, 3,386,938) = 84,228, p < .001$). As illustrated in Figure 3, delayed, on-time, and early enrolled children from the first and third quintile seemed to have similar performance. In the second, fourth, and fifth quintile groups, early enrolled children had somewhat lower performance levels in kindergarten mathematics in comparison to the delayed and on-time enrolled children whose performances were similar.

Next, the three-ways interaction effects were explored. There were significant interaction effects of gender X race X kindergarten enrollment on the beginning ($F(8, 3,386,938) = 293.17, p < .001$), and end of kindergarten mathematics achievement ($F(8, 3,386,938) = 307.35, p < .001$). Figures 4-7 depict the gender X race X kindergarten enrollment interaction effects. In general, female children with delayed enrollment performed higher than those with on-time and early enrollment in all racial groups. The effects of kindergarten enrollment status for male students were mixed across different racial groups. Delayed enrolled male children performed better than on-time and early enrolled children if they were White. Then, for the Hispanic group, the mathematics scores of male children whose enrollments were delayed, on-time, and early were similar. Among Black male children, early enrolled children performed better at the beginning of kindergarten, and gained more, than did the on-time and delayed enrolled children. Among Asian male children, the mathematics scores of delayed enrolled children at the beginning and end of kindergarten were lower than the scores of early enrolled children, who scored lower than on-time enrolled children.

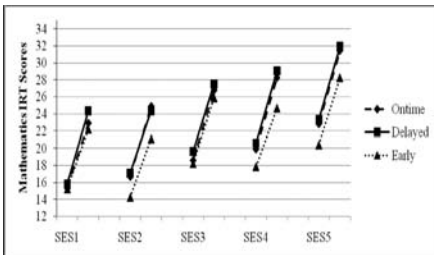


Figure 3. Mathematics IRT Scores in the Fall and Spring of Kindergarten by Kindergarten Enrollment Status and SES

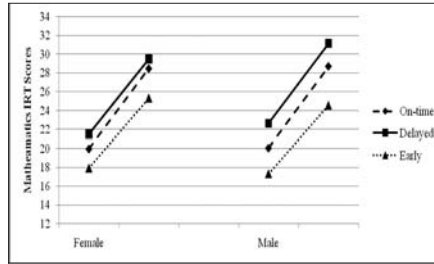


Figure 4. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from White Racial Group by Their Kindergarten Enrollment Status

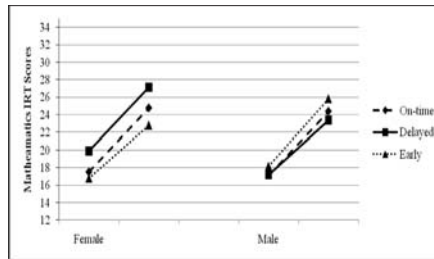


Figure 5. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from Black Racial Group by Their Kindergarten Enrollment Status.

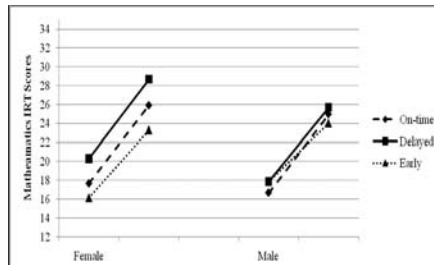


Figure 6. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from Hispanic Racial Group by Their Kindergarten Enrollment Status

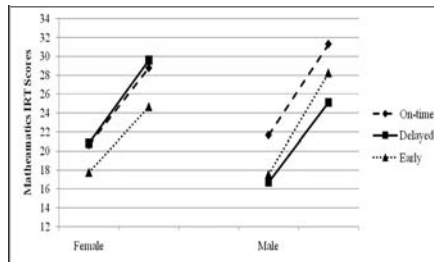


Figure 7. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from Asian Racial Group by Their Kindergarten Enrollment Status

A gender X SES X kindergarten enrollment interaction effect was also found for the beginning ($F(8, 3,386,938) = 307.35, p < .001$) and end of kindergarten ($F(8, 3,386,938) = 307.35, p < .001$). As shown in Figure 8, in the first SES quintile, delayed enrolled female children performed better than on-time enrolled children. Among the male children, on-time enrolled children scored higher than delayed enrolled children who scored higher than early enrolled children. Delayed enrolled female children seemed to gain more, and early enrolled male children seemed to gain less from the beginning to the end of kindergarten.

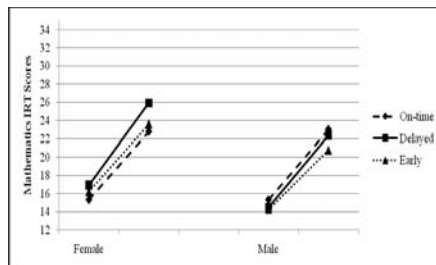


Figure 8. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from the First SES Quintile by Their Kindergarten Enrollment Status.

In the second SES quintile (plotted in Figure 9), on-time enrolled male children scored higher and gained more than delayed and early enrolled male children. For female children, early enrolled children started kindergarten with lower mathematics skills than on-time and delayed enrolled children, and showed slower gain in kindergarten year. In the third SES quintile (see Figure 10), delayed, early, and on-time enrolled male children scored similar, with early enrolled children performing slightly better than on-time and delayed children. Female children with delayed enrollment scored higher than those with on-time and early enrollment.

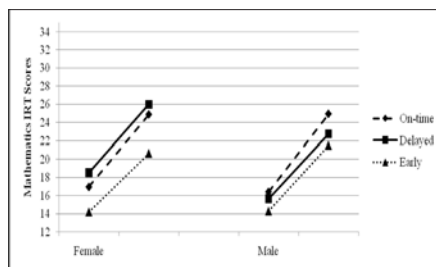


Figure 9. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from the Second SES Quintile by Their Kindergarten Enrollment Status

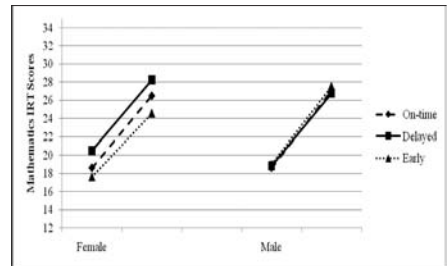


Figure 10. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from the Third SES Quintile by Their Kindergarten Enrollment Status

In the fourth SES quintile, shown in Figure 11, delayed, early and on-time enrolled male children started kindergarten with almost similar mathematics scores, but early enrolled male children gained less than on-time enrolled children who gained less than delayed enrolled children. Early enrolled female children scored lower than on-time and delayed enrolled female children. Delayed and on-time enrolled female children scored similar at the end of kindergarten although delayed enrolled children started kindergarten with slightly stronger mathematics scores.

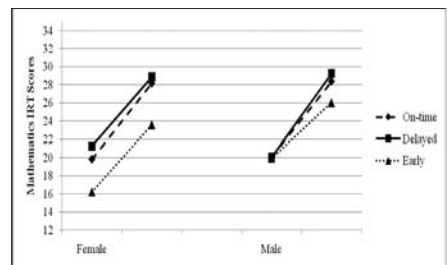


Figure 11. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from the Fourth SES Quintile by Their Kindergarten Enrollment Status

In the fifth SES quintile (see Figure 12), on-time enrolled male children scored higher than delayed and early enrolled children at the beginning and end of kindergarten, but early enrolled children gained more and scored higher than delayed enrolled children at the end of kindergarten. Among the female children, delayed enrolled children scored higher than on-time enrolled children who scored higher than early enrolled children. Early enrolled female children showed slower growth than delayed and early enrolled female children from the beginning to the end of kindergarten.

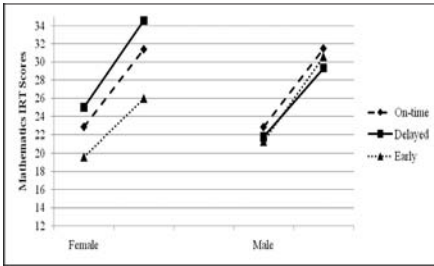


Figure 12. Mathematics IRT Scores in the Fall and Spring of Kindergarten for Female and Male Children from the Fifth SES Quintile by Their Kindergarten Enrollment Status

Finally, a gender X race X SES X kindergarten enrollment interaction was significant at the beginning ($F(28, 3,386,938) = 200.90, p < .001$), and end of kindergarten ($F(28, 3,386,938) = 197.57, p < .001$). Means and standard deviations were cross-tabulated by the four grouping variables.

Table 3 summarized the group differences by kindergarten enrollment. As seen in Table 3, delayed enrolled White male and female children performed stronger and early enrolled White male and female children performed weaker than on-time enrolled White male and female children, regardless of their SES level. The evidences for the other racial groups were more mixed.

Discussion

This study examined the extent to which children's mathematics achievement varied by their kindergarten enrollment status, as well as the interactions between kindergarten enrollment status and children's gender, race and family SES. The study utilized a nationally representative sample and therefore the findings could be of interest to policy-makers as well as practitioners. In general, the findings suggest that those children whose kindergarten enrollment was on time or delayed had stronger mathematics skills, while those whose enrollment

Table 3.

Summary of Whether Male and Female Children Performed Stronger or Weaker When They Were Enrolled in Kindergarten Early, Delayed or On Time Within the Racial and SES Groups.

| | Female | | Male | |
|------------------|------------------|-----------------|------------------|-----------------|
| | Stronger | Weaker | Stronger | Weaker |
| <i>White</i> | | | | |
| SES 1st Quintile | Delayed | Early | Delayed | Early |
| SES 2nd Quintile | Delayed | Early | Delayed | Early |
| SES 3rd Quintile | Delayed | Early | Delayed | Early |
| SES 4th Quintile | Delayed | Early | Delayed | Early |
| SES 5th Quintile | Delayed | Early | Delayed | Early |
| <i>Black</i> | | | | |
| SES 1st Quintile | Early | Delayed/On time | Early | Delayed/On time |
| SES 2nd Quintile | On-time | Early/Delayed | On time/Early | Delayed |
| SES 3rd Quintile | Delayed/on time | Early | Early | On time |
| SES 4th Quintile | On time | Early | Early | Delayed |
| SES 5th Quintile | Delayed | Early | On time | Early/Delayed |
| <i>Hispanic</i> | | | | |
| SES 1st Quintile | Delayed | Early | Delayed/ On time | Early |
| SES 2nd Quintile | Delayed | Early | On time | Delayed |
| SES 3rd Quintile | On time/ Delayed | Early | Delayed/Early | On time |
| SES 4th Quintile | On time | Early | Delayed | On time |
| SES 5th Quintile | Delayed | Early | Delayed | On time/Early |
| <i>Asian</i> | | | | |
| SES 1st Quintile | Delayed | On time/Delayed | On time | Early |
| SES 2nd Quintile | Delayed | On time | On time | Early |
| SES 3rd Quintile | On time | Early | On time | Early |
| SES 4th Quintile | On time | Delayed | On time | Delayed |
| SES 5th Quintile | On time | Delayed | On time | Delayed |

into kindergarten was early had lower mathematics skills. This finding is generally consistent with the results of previous research studies (e.g., Breznitz & Teltsch, 1989; Campbell, 1985; Davis et al., 1980; Freberg, 1991; Langer et al., 1984; Morrison et al., 1997; Stipek & Byler, 2001; West et al., 2000; Zill & West, 2001).

The data showed that approximately 6% of the children had their kindergarten enrollment delayed for a year or more. There were greater percentages of male children, children from White racial groups, and from higher SES families in the delayed enrolled group. These findings are in agreement with those of previous research studies (Bellisimo et al., 1995; Brent et al., 1996; Cosden et al., 1993; Dobkin & Ferreira, 2010; Grau & DiPerna, 2000; Stipek & Byler, 2001; Walsh et al., 1991; Zill et al., 1997). Also, on average, the findings suggested that delayed enrolled children had stronger mathematics skills than did the on-time enrolled children, who had stronger skills than did the early enrolled children. Again, this finding is consistent with previous research (e.g., Breznitz & Teltsch, 1989; Campbell, 1985; Davis et al., 1980; Freberg, 1991; Langer et al., 1984; Morrison et al., 1997; Stipek & Byler; West et al., 2000; Zill & West, 2001). The latter findings appear to be a natural consequence because delayed enrolled children were mostly from the higher SES families. In agreement with the previous research (Bickel et al., 1991; Lee & Burkam, 2002), the present study showed that children from high SES families, and White racial group, in general, show better performance than those who are from low SES families and racial minority groups. Children's kindergarten enrollment status and SES interaction showed that delayed enrolled children had higher and early enrolled children had lower mathematics skills than on-time enrolled children in the higher SES group and in the White racial background. The mathematics achievements of children whose enrollments were delayed, on-time, or early were similar for those from the lower SES families and for those from a Black racial background.

One important finding of the current study is that the effect of kindergarten enrollment status was smaller than the effects of socio-demographic characteristics, particularly smaller than the effect of family SES. As evidenced by the Cohen's *ds*, the effect sizes for delayed, early, and on-time enrolled children were small while the effect sizes for race ranged from moderate to large and the effect sizes for the SES was quite large in both be-

ginning and end of kindergarten achievement. As suggested by Ginsburg and Papas (2004), there would be several factors associated with SES that contribute to improved academic performance as SES level increases, such as differences in the home environment including availability of computers and educational toys, tutoring in literacy and mathematics, enrolling their children to schools with better quality. However, any plausible explanation is beyond the scope of the study and would merely be speculative.

Gender interacted with the kindergarten enrollment status; however, by itself its effect was negligible. This finding is inconsistent with previous research (i.e., Sheehan et al., 1991). The family SES, gender and race seem to function differently for different races, and for males and females when interacting with kindergarten enrollment status. When the effect of delayed, early, and on-time enrollment in conjunction with gender, race, and family SES is explored, a trend reported in the literature (e.g., delayed enrolled children perform stronger and younger children perform weaker) appears to reflect the relationship pattern for White children and children from higher SES families. Because the data suggested that children from minority groups and from lower SES families have different patterns of kindergarten enrollment-achievement relationship. In addition, male and female children within each SES and racial groups seemed to be affected differently as a result of being enrolled in kindergarten early, on time, or delayed. While delayed enrollment seems to result in better outcomes for a group of children, it seems to result in weaker skills for another group of children. One plausible conclusion is that the consequence of delaying the enrollment of children in kindergarten or enrolling early or on time, on children's mathematics skills must be considered within each child's demographic characteristics. Children's gender, race and family SES are static variables that cannot be manipulated. However, when to enroll a child in kindergarten can be manipulated. The findings of this study provide evidence regarding which enrollment decision may possibly work better for which group of children.

This study shed light that the current understanding and practices about the effect of kindergarten enrollment status on children's achievement are based on mainstream culture and economically advantaged children. The results of this study clearly show that children from less advantaged backgrounds and from a non-White racial group may

benefit more from early or on-time kindergarten enrollment than they may benefit from delayed enrollment. Many studies suggest that children are less likely to be ready for school and therefore vulnerable to school failure if they enter kindergarten when they are younger. However, for families from lower SES, providing an extra year of child care may be untenable. Additionally, children's home and educational environment is not probably going to change when they do not enter kindergarten. If they were at a disadvantage a year ago because of their family and personal backgrounds, they are still at a disadvantage the following year. On the other hand, when they access a kindergarten program, they will have a chance to succeed in school.

The present study is not without limitations. This study presents a different perspective on the kindergarten entrance debate by examining socio-demographic differences on the effects of delayed, early, and on-time enrollment. In addition the study provides a detailed picture of how male and female children from different racial and SES background perform in mathematics based on whether their kindergarten enrollment was on-time, early, or delayed. Future research should seek to control for class-level variables such as quality and quantity of instruction as well as the quality of the children's home environment. In addition, the type of child-care and the quality of child care the year before kindergarten should be taken into consideration.

This study was an examination of the effect of delayed, early, and on-time kindergarten enrollment on children's kindergarten mathematics achievement. A primary goal of the study was to determine whether the relationship between the kindergarten enrollment status and mathematics achievement varies by children's gender, race, and family SES status. On average, the study's findings suggest that children with delayed enrollment had stronger mathematics skills than those with on-time enrollment, who had stronger skills than children with early enrollment. However, this pattern of relationship appeared to be different for children from lower socioeconomic background and from racial minority groups by their gender.

If anything, the findings highlight the complexity of the age of kindergarten entry issue. The results indicate that the academic consequences, in this case mathematics achievement, of delaying kindergarten enrollment or enrolling children early, is embedded in a socio-cultural context. Generalizing findings concerning the effects of kindergarten enrollment is difficult at best. While delaying

kindergarten enrollment might benefit one group of children, others might be at a disadvantage. Similarly, early kindergarten enrollment will not necessarily benefit children equally.

References

- Ames, L. (1967). *Is your child in the wrong grade?* New York, NY: Harper & Row.
- Bellisimo, Y., Sacks, C. H., & Mergendoller, J. R. (1995). Changes over time in kindergarten holding out: Parent and school contexts. *Early Childhood Research Quarterly*, 10, 205-22.
- Bickel, D. D., Zigmond, N., & Strayhorn, J. (1991). Chronological age at entrance to first grade: Effects on elementary school success. *Early Childhood Research Quarterly*, 6, 105-117.
- Bracey, G. W. (1989). Age and achievement. *Phi Delta Kappan*, 70 (9), 732.
- Bredenkamp, S. (1987). *Developmentally appropriate practice in early childhood programs serving children from birth through age eight*. Washington, DC: National Association for the Education of Young Children.
- Brent, D., May, D. C., & Kundert, D. K. (1996). The incidence of delayed school entry: A twelve-year review. *Early Education & Development*, 7 (2), 121-135.
- Breznitz, Z., & Teltsch, T. (1989). The effect of school entrance age on academic achievement and social-emotional adjustment of children: Follow-up study of fourth graders. *Psychology in the Schools*, 26 (1), 62-68.
- Buntaine, R., & Constenbader, V. (1997). The effectiveness of a transitional prekindergarten program on later academic achievement. *Psychology in the Schools*, 34 (1), 41-49.
- Cameron, M. B., & Wilson, B. J. (1990). The effects of chronological age, gender, and delay of entry on academic achievement and retention: Implications for academic redshirting. *Psychology in the Schools*, 27 (3), 260-263.
- Campbell, S. M. (1985). *Kindergarten entry age as a factor in academic failure* (ERIC Reproduction Service No: ED256495).
- Cosden, M. A., Zimmer, J., & Tuss, P. (1993). The impact of age, sex, and ethnicity on kindergarten entry and retention decisions. *Educational Evaluation & Policy Analysis*, 15, 209-222.
- Crone, D. A., & Whitehurst, G. J. (1999). Age and schooling effects on emergent literacy and early reading skills. *Journal of Educational Psychology*, 91 (4), 604-614.
- Crosser, S. L. (1991). Summer birth date children: kindergarten entrance age and academic achievement. *The Journal of Educational Research*, 84, 140-6.
- Davis, B. G., Trimble, C. S., & Vincent, D. R. (1980). Does age of entrance affect school? *Elementary School Journal*, 80 (3), 133-143.
- Dietz, C., & Wilson, B. J. (1985). Beginning school age and academic achievement. *Psychology in the Schools*, 22 (1), 93-94.

- Dobkin, C., & Ferreira, F. (2010). Do school entry laws affect educational attainment and labor market outcomes? *Economics of Education Review*, 29 (1), 40-54.
- Eamon, M. (2002). Effects of poverty on mathematics and reading achievement of young adolescents. *Journal of Early Adolescence*, 22 (1), 49-74.
- Education Commission of States (ECS). (2004). *State status regarding kindergarten*. Retrieved May 21, 2011 from <http://mb2.ecs.org/reports/Report.aspx?id=31>.
- Freberg, L. (1991). Relationships between chronological age, developmental age, and standardized achievement tests in kindergarten. *Psychology in the Schools*, 28 (1), 77-81.
- Freisen, D. (1984). Too much, too soon? *Principal*, 63 (4), 14-18.
- Ginsburg, H. P., & Papas, S. (2004). SES, ethnic, and gender differences in young children's informal addition and subtraction: A clinical interview investigation. *Journal of Applied Developmental Psychology*, 25 (2), 171-192.
- Grau, M. E. (1993). *Ready for what? Constructing meanings of readiness for kindergarten*. Albany, NY: State University of New York Press.
- Grau, M. E., & DiPerna, J. (2000). Redshirting and early retention: Who gets the "gift of time" and what are its outcomes? *American Educational Research Journal*, 37 (2), 509-34.
- Grau, M. E., Kroeger, J., & Brown, C. (2003). *The gift of time: Enactments of developmental thought in early childhood practice* (ERIC Reproduction Service No: ED475619).
- Gray, R. (1985). *Criteria to determine entry into school: A review of the research* (ERIC Reproduction Service No: ED260826).
- Gredler, G. (1992). *School readiness: Assessment and educational issues*. Brandon, VT: Clinical Psychology Publishing Company.
- Hammond, C. H. (1986). "Not ready! Don't rush me!" *Childhood Education*, 62 (4), 276-80.
- Holloway, J. H. (2003). When children aren't ready for kindergarten. *Educational Leadership*, 60 (7), 89-90.
- Jamieson, A., Currie, A., & Martinez, G. (2001). *School enrollment in the United States: social and economic characteristics of students*. Retrieved April 23, 2012 from <http://www.census.gov/prod/2001pubs/p20-533.pdf>.
- Jones, M. M., & Mandeville, G. K. (1990). The effect of age at school entry on reading achievement scores among South Carolina students. *Remedial and Special Education*, 11 (2), 56-62.
- Langer, P., Kalk, J. M., & Searls, D. T. (1984). Age of admission and trends in achievement: A comparison of blacks and Caucasians. *American Educational Research Journal*, 21 (1) 61-78.
- Lee, V. E., & Burkam, D. T. (2002). *Inequality at the starting gate: Social socio-demographic differences in achievement as children begin school* (ERIC Reproduction Service No: ED470551).
- Lewit, E. M., & Baker, L. S. (1995). School readiness. *The Future of Children*, 5 (2), 128-139.
- Lin, H., Lawrence, F. R., & Gorrell, J. (2003). Kindergarten teachers' views of children's readiness for school. *Early Childhood Research Quarterly*, 18 (2), 225-37.
- May, D. C., & Welch, E. L. (1984). The effects of developmental placement and early retention on children's later scores on standardized tests. *Psychology in the Schools*, 21, 381-385.
- McGill-Franzen, A. (1993). *Shaping the preschool agenda: early literacy, public policy and professional beliefs*. New York, NY: State University of New York Press.
- Moore, R. S., & Moore, D. N. (1975). *Better late than early: a new approach to your child's education*. New York, NY: Reader's Digest Press.
- Moore, R. S., Moore, D. N., Willey, T. J., Moore, D. R., & Kordembrock, D. K. (1979). *School can wait*. Provo, Utah: Brigham Young University Press
- Morrison, F. J., Griffith, E. M., & Alberts, D. M. (1997). Nature-nurture in the classroom: entrance age, school readiness, and learning in children. *Developmental Psychology*, 33, 254-62.
- National Association for the Education of Young Children (NAEYC). (1995). *NAEYC position statement on school readiness*. Retrieved June 12, 2012 from <http://www.naeyc.org/about/positions/psredy98.asp>
- National Association of Early Childhood Specialists. (2001). Position Statement. Still unacceptable trends in kindergarten entry and placement, *Young Children*, 56, 59-62.
- National Center for Education Statistics (NCES), (2001). *The condition of education 2001*. Washington: U.S. Department of Education, Office of Educational Research and Improvement. Retrieved 28 September 2012 from <http://nces.ed.gov/pubs2001/2001072.pdf>.
- Okon, W., & Wilgocka-Okon. B. (1973). *The school readiness project*. Paris: United Nations Educational, Scientific and Cultural Organization: IBE.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage publications.
- Shannon, G. S., & Bylsma, P. (2002). *Addressing the achievement gap: A challenge for Washington State educators* (ERIC Reproduction Service No: ED 474392).
- Sheehan, R., Cryan, J. R., Wiechel, J., & Bandy, I. G. (1991). Factors contributing to success in elementary schools: Research findings for early childhood educators. *Journal of Research in Childhood Education*, 6 (1), 66-75.
- Shepard, L., & Smith, M. (1989). *Flunking grades: Research and policies on retention*. London, UK: Falmer Press.
- Siegel, D. F. & Hanson, R. A. (1991). Kindergarten educational policies: Separating myth from reality. *Early Education and Development*, 2 (1), 5-31.
- Stipek, D. (2002). At what age should children enter kindergarten? A question for policy makers and parents. *Social Policy Report*, XVI (2), 3-17.
- Stipek, D., & Byler, P. (2001). Academic achievement and social behaviors associated with age of entry into kindergarten. *Journal of Applied Developmental Psychology*, 22 (2), 175-189.
- Walsh, D. J., Ellwein, M. C., Eads, G. M., & Miller, A. K. (1991). Knocking on kindergarten's door: Who gets in? Who's kept out? *Early Childhood Research Quarterly*, 6 (1), 89-100.

Wesley, P. W., & Buysse, V. (2003). Making meaning of school readiness in schools and communities. *Early Childhood Research Quarterly*, 18 (3), 351-75.

West, J., Meek, A., & Hurst, D. (2000). *Children who enter kindergarten late or repeat kindergarten: Their characteristics and later school performance. Stats in brief* (ERIC Reproduction Service No: ED 443570).

Zill, N., & West, J. (2001). *Entering kindergarten: A portrait of American children when they begin school. Findings from the condition of education, 2000* (ERIC Reproduction Service No: ED448899).

Zill, N., Loomis, L. S., & West, J. (1998). *The elementary school performance and adjustment of children who enter kindergarten late or repeat kindergarten: findings from national survey* (NCES No: 98-097). Washington, DC: U.S. Department of Education.