

Winter 1989

The effect of a readiness year on children's school achievement, self-concept, and teacher expectations

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**The effect of a readiness year on children's school achievement,
self-concept, and teacher expectations**

McKenna, Maria White, Ph.D.

University of New Hampshire, 1989

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**THE EFFECT OF A READINESS YEAR
ON CHILDREN'S SCHOOL ACHIEVEMENT, SELF-CONCEPT,
AND TEACHER EXPECTATIONS**

BY

**MARIA WHITE MCKENNA
B.A. Regis College, 1976
M.A. University of New Hampshire, 1983**

DISSERTATION

**Submitted to the University of New Hampshire
in Partial Fulfillment of
the Requirements for the Degree of**

Doctor of Philosophy

in

Psychology

December, 1989

PLEASE NOTE:

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ACKNOWLEDGEMENTS

I would like to express my appreciation to the many people who helped me during the research and writing of this dissertation. Without their assistance, this project could not have been completed.

Thanks to my chairperson, Carolyn Mebert, for her support, patience, and hours of reading and editing during the long journey from the idea for this project to its completion. Thanks also to the members of my dissertation committee: John Limber, Victor Benassi, Grant Cioffi and Deborah Stone for their interest, support, and encouragement.

To my friends at the University of New Hampshire, especially to Susan, Marcy, Ellen, and Judi, I extend my warmest appreciation for your concern, caring, and faith in me and my project.

Finally, thanks to my family - to my parents, brothers and sisters, to Daniel - for their love and encouragement throughout this endeavor. And especially to Paul - for many long nights of help with typing and tables, for the gentle prodding and vigorous ego-boosting, for always believing that the goal would be reached, and for your constant love and support - thank you. I could not have done it alone.

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ABSTRACT

THE EFFECT OF A READINESS YEAR ON CHILDREN'S SCHOOL ACHIEVEMENT, SELF-CONCEPT, AND TEACHER EXPECTATIONS

by

MARIA WHITE MCKENNA
University of New Hampshire
December, 1989

The purpose of the present study was to investigate the effects of a readiness year on children's later school performance and self-concept. An examination of teachers' attitudes towards readiness and expectations for students' performance was also included.

School records of fourth graders in two New Hampshire school districts were examined. Classroom grades, standardized test scores, Gesell School Readiness Test results, age, and sex were recorded for each participating student. A self-perception scale was administered to the students near the end of the third grade.

Teachers in the two districts completed a questionnaire composed of a series of vignettes. Five variables were systematically varied in each of the vignettes: a student's sex, whether or not the child had attended kindergarten, whether or not the child had attended a readiness year, level of academic skills and social maturity (high, medium, or low). For each vignette, teachers rated the extent to which they thought the student would be successful in the

coming school year.

Student data were analyzed using a 2x2 factorial MANOVA, with placement (readiness or traditional first grade placement) as one variable and chronological age as the other variable. The MANOVA revealed significant differences between the two placement groups on all academic variables; indicating that traditional students scored higher than readiness students on grade point average achievement test scores. Neither the age main effect nor the age by placement interaction was significant.

Self-perception scores showed significant differences between the groups in two areas. In athletic self-perception, readiness students achieved significantly higher scores than traditional students; in behavioral self-perception, traditional students achieved significantly higher scores. Despite the difference in achievement between the two groups, there was no difference in academic self-perception between the readiness and traditional students.

Multiple regression analyses of teacher data showed that success in school was primarily predicted using current academic skills and social maturity.

Results raise questions about the effectiveness of giving "unready" children an extra year before first grade. Discussion centers on alternative conceptualizations of the factors which put children at risk for school failure, and suggestions for future research.

I. INTRODUCTION

Developmental readiness is a concept underlying many educational practices and philosophies. In recent years, an increasing number of American schools have used the policy of placement in readiness rooms for children considered unready for the regular first grade experience. The basic notion underlying readiness and of placement in readiness classes is that a child will not be successful in learning until he or she has reached a requisite stage of development, or until he or she is ready.

Following the work of Arnold Gesell and other child development researchers, this concept of readiness holds that there is an inner timetable which determines readiness to do things, and any benefits of early training are relatively temporary. Gesell's work (1943, 1949) furnished standards in many aspects of development against which children may be compared to discover if their growth is progressing normally. These standards, or norms, are based on extensive and detailed study of the development of infants and children, and still serve as an important source of information for pediatricians and psychologists.

Gesell identified norms for behavior, which he labelled "growth gradients" - frames of reference which can be used to locate the stage of maturity which a child has reached in a given behavioral arena. Gesell and Ilg (1949) state that

these gradients allow us to "estimate the developmental ground he has already gained and the ground which lies just ahead. Educational and guidance measures can then be adapted to the maturity of the child" (p. 26). Failure to consider the child's developmental level in this way leads to "wasted efforts, to harmful interference and unjust discipline" (Gesell & Iq, 1949, p. 26).

The dominant theme throughout Gesell's work is that the prime factor in shaping development for both the average child and for children deviating from the average is the child's genetically set maturation schedule, a schedule that requires environmental support but cannot be sped up by environmental forces.

The evidence Gesell accumulated to support this viewpoint came from years of extensive observational study of children. In 1919 he began a systematic longitudinal investigation of normal children from birth to the age of six. In 1927, he directed a more detailed study, using movie cameras to record behavior. He also set up a homelike nursery unit with one-way viewing arrangements, so mothers could be observed while interacting with their infants in as natural a manner as possible. The data collected by Gesell and his staff enabled them to establish steps, or "gradients of growth," for the typical child at each age level. These norms of development included the areas of motor behavior, language, adaptive behavior (eye-hand coordination, imitation, recovery of objects, comprehension, and number

concept), and personal-social behavior (reaction to persons, acquired information and personal habits) (Gesell, 1926).

On the basis of these extensive observations of children's behavior, Gesell concluded that behavior is strongly governed by a timetable "chiefly due to innate and endogenous factors" (Gesell, 1929, p. 307). He summed up the studies in the following manner:

The Yale Psycho-Clinic has made studies of several hundreds of normal infants, which show that the curve of mental growth tends to follow lawful lines. The underlying similarities of given age levels constantly assert themselves. In other words, the development of behavior, or the growth of the mind, obeys certain laws of organic sequence (1930, p. 140).

Further evidence of the primary role of the innate nature of development came from observations of the developmental correspondence in identical twins, of the limitations of training (that children below a certain age could not be taught to climb stairs, regardless of the amount of practice), the restricted influence of physical handicap (that children who are not allowed a great deal of physical activity early in life still display motor skills similar to those of their age-mates who were not limited in their physical activities), and the developmental progression in emotional behavior.

Gesell noted that although it is impossible to deny that the environment plays any role in the development of the infant or young child, he stressed the primary role of the processes of maturation in the growth of the mind. Growth, he says, is a function of the organism rather than

of the environment as such.

The environment furnishes the foil and milieu for the manifestations of development, but these manifestations come from inner compulsion and are primarily organized by inherent inner mechanics and by an intrinsic physiology of development (1930, p. 291).

This relation between physical and mental growth is stressed by Gesell elsewhere as well. In fact, the two are so closely interwoven that they should not be distinguished from each other (Gesell, 1932). "Growth is a process so intricate and so sensitive that there must be powerful stabilizing factors, intrinsic rather than extrinsic, which preserve the balance of the total pattern and the direction of the growth trend" (1929, p. 319.)

The results of his observations of children's behavior led Gesell and his coworkers to stress the orderliness of mental growth. The child, as they point out, stares at a cube before he grasps it; he corrals it with his hands before he grasps it with his fingers; he builds cube towers before he builds cube bridges. "How erroneous it would be to insist that he build bridges before towers! How idle it would be to train him to do either before he has the requisite capacity!" (Gesell, 1932, p. 204).

Many educators, influenced by Gesell, accept the point of view that behavior is a function of growth which is structured, orderly, predictable, and measurable. This view emphasizes that physical, social, emotional, and intellectual aspects of a child are interdependent, and that one aspect should not be pushed ahead of the others. The

Gesell Institute of Human Development began in the 1950s to promote the concept of developmental rather than chronological school placement. The Gesell Screening Test would be used to identify a child's developmental age, which could determine school placement. Thus, if a six-year old is functioning on the Gesell screening as a five-year-old, he will not be ready for the work of first grade, regardless of what the law allows (Ilg, Ames, Haines, & Gillespie, 1978).

Early Work on Readiness

A number of studies had been carried out by the Gesell Institute to investigate the relationship between school difficulty and immaturity, or unreadiness for the work of the grade in which the child was currently placed. In a three year study begun in 1958 in a school in Weston, Connecticut, children in kindergarten, first grade, and second grade were given the Gesell developmental tests, as well as standard intelligence tests and projective tests. The children were then followed for three subsequent years, with the tests repeated each year. The investigation focused on how closely the examination findings coincided with teachers' ratings of success in the grade; in other words, did the children considered unready in the fall of the school year turn out to be those considered unready for promotion in June? The result showed a fairly high correspondence between predictions based on developmental examination response and teachers' ratings for kindergarten

subjects. The agreement decreased with added age and higher grade placement (83% agreement for kindergarten subjects and 59% for second grade subjects) (Ilg & Ames, 1964).

A smaller comparison study was carried out by the same authors in 1963 in which a group of North Haven, Connecticut kindergarten students was evaluated at the end of the school year. This study showed similar results to the previous one, with slightly more unready students than in the Weston group (Ilg & Ames, 1964).

As a follow-up to the original three-year Weston study, in the spring of 1964 Ilg and Ames examined the school performance of the children who had been kindergarteners in the original study, and who were now in sixth grade. Correlation between the original predictions (ready, questionably ready, or unready) and the school performance of the children (placement in level of achievement from 1 - most excellent to 4 - least excellent) was .74. The authors of these studies state, "Our findings in Weston were substantial enough to convince us that many children started in school on the basis of chronological age alone turned out to be overplaced " (Ilg et al., 1978).

On the basis of this research, the Gesell Institute recommended "developmental placement" for all elementary schools. Children should be enrolled in school and subsequently promoted on the basis of behavior age rather than intellectual level or chronological age. On the basis of the child's behavior age, he or she would be placed in

either first grade or a pre-first grade (readiness) class. Some children, the Institute holds, may need two years in a readiness class before starting first grade.

The Gesell Institute suggests that as many as 50% of school problems could be prevented or remedied if all children were placed in the grade appropriate for their developmental age (Ilg et al., 1978). They also state that many school difficulties, including problems diagnosed as emotional disturbance, learning disabilities, and underachievement are the result of children being asked to perform at levels for which they are not developmentally ready (Ilg, Ames & Barker, 1981). Other effects of being "overplaced" (placed in a class for which the child is not ready) were outlined in a manual prepared by the New Hampshire School Readiness Project (Carll & Richard, 1972). These include: physical reactions (chronic absenteeism, fatigue, frequent colds, poor printing, squinting, poor hearing, inaccurate visual perception); social reactions (few friends, lack of leadership, withdrawal, lack of confidence, anger, aggression); emotional reactions (crying, anxiety, daydreaming, feelings of unworthiness and inadequacy, restlessness, fearfulness); and academic reactions (difficulty in finishing work, erratic achievement, underachievement, lack of effort (Carll & Richard, 1972).

The Gesell Institute recommends that children deemed unready for first grade should be given time to mature. The

Institute does not, however, provide a curriculum for the "readiness rooms". According to the New Hampshire School Readiness Project (Carll & Richard, 1972), a pre-first, or readiness, classroom is not designed to "get" children ready for first grade. It is a place where readiness is allowed to "emerge as nature intended it to" (p. 67). The readiness classroom provides an experiential environment, both for enhancing or enriching growth, and for providing a foundation on which future, more abstract learning can be built.

Carll and Richard's (1972) manual is used by readiness teachers in setting up their own readiness classes. The authors established a number of objectives of a readiness classroom that highlight the emphasis on biological maturation (time to grow) and on experiential, manipulative activities rather than on the more "academic" work of first grade (reading, writing, arithmetic). The objectives of the readiness class, as put forth by the New Hampshire School Readiness Project are:

To give the child time to grow.

To help the child develop a strong sense of self - to allow him or her to "blossom from within".

To provide an environment rich in equipment and materials, where experiences are direct and concrete, to build the foundation for later, more abstract experiences.

To provide movement experiences for development of physical and motor skills.

To promote growth in visual, auditory, and tactual perception.

To provide listening activities.

To provide many and varied opportunities for oral expression.

To build a foundation for sophisticated math concepts through the manipulation of concrete materials.

To build a foundation for chemistry, physics, and biology through discovery and play with blocks, and natural materials such as water and sand.

To help the child relate to others socially and to be a part of a group.

To promote creative expression through art, dance, music, cooking, and story telling.

To help the child develop the habit of success (Carll & Richard, 1972, p. 10).

Research Supporting Developmental Placement

Ilg et al. (1978) cite a number of unpublished studies that support their view that developmental placement can reduce school failure. One such study in Visalia, California showed that one year after the initiation of developmental placement, the number of referrals outside the school for special help was sharply reduced (from 58 to 8). In Garden Grove, California, the 1966-1967 first graders were kept as a control group and all the kindergarten children the next year were placed developmentally. There were sharp contrasts in the performance of the two groups:

65% of the control group had read below grade level, in contrast to only 8% of the developmentally placed children. A study in Gwinnet County, Georgia showed that developmental age (as measured by the Gesell School Readiness Test) more accurately predicted reading success in first graders than did chronological age. Finally, a town in California reported that children in a school using developmental placement scored higher in reading achievement than children in a traditional school (Ilg et al., 1978).

More recently, the Contoocook Valley, New Hampshire School District found more problems with retention, remedial reading, peer relations and attitudes toward school in "overplaced" children, i.e., children assessed as unready for first grade but not given extra time before entrance to grade one (Grant, 1985). In another recent study, Wood, Powell, and Knight (1984) screened 84 kindergarten-eligible children who were not developmentally placed, and found that developmentally young children were significantly more likely to be identified later by their school as being in need of special education services. In the study, the children requiring special education services had a mean developmental age of 56 months, while those who did not need special services had a mean developmental age of 60 months on the Gesell School Readiness Screening Test. There was not a statistically significant difference between the mean chronological ages of the two groups.

Criticisms of Research Supporting Developmental Placement

Though these recent reports seem to support developmental placement of children, their results must be considered with caution for a number of reasons. First, in the studies reported by Ilg et al., and in the Contoocook Valley study, statistical analyses are not available, so the question of statistically significant differences between groups is unanswered. Additionally, the unpublished research cited by Ilg et al. tells us nothing about the characteristics of the groups of children sampled. Socioeconomic differences as well as racial and ethnic differences are not reported, though these factors may be important factors in children's success in school (Meisels, 1987; Liu and Brinlee, 1983).

Second, in those studies that do report or seem to contain highly significant differences, other variables could have affected the results. For example, studies have shown that teacher expectancies can affect the school performance of students (Rosenthal & Jacobsen, 1968). In schools using developmental placement and readiness, teachers may expect more of students who have had an extra year to mature before entering grade one. On the other hand, knowing that a child has been "overplaced" could lead to expectations of less than optimal school performance.

Third, methodological problems exist in a number of the studies. For example, in the Wood et al. study, the Gesell test was administered one to four months after the criterion

(assignment to special education status), and then linearly adjusted to the beginning of the school year. As the authors state, "For practical reasons it was not possible to collect screening and criterion data in the optimal sequence" (p. 11). Wood et al. agree that their assumption that developmental growth over this four month period proceeds at a linear rate is open to question, but go on to defend it, stating that "the error thus introduced is likely to be small" (p. 11). Actually, the screening done by Wood et al. made as many wrong classifications of unreadiness as correct decisions. Of the 17 kindergartners actually judged to be "failures" by their teachers, only eight were correctly identified by developmental age. At the same time, nine children who were said to be unready in fact succeeded. As stated in a recent review of readiness classes in Boulder, Colorado, "It will always be the case, whenever the correlation is only modest and the group to be identified is a relatively small proportion, that as many or more wrong diagnoses of unreadiness will be made as correct predictions of problems" (Shepard & Smith, 1985, p. 49; emphasis in original). Graue and Shepard (1988) echo this concern. Finding a correlation of .23 between the Gesell School Readiness Test Developmental Age and first grade report cards, they conclude that if the one-third least ready children were selected as at risk for school failure, only 41% of those children would in fact have problems later. As a result, 3 of 5 children identified as unready

would actually be successful (Graue & Shepard, 1988).

Fourth, a number of studies have been conducted which contradict the claim that an extra year before first grade reduces the incidence of school failure among children diagnosed by readiness screening tests as "developmentally young". Those studies will be considered in the next section.

Research Critical of Developmental Placement

A number of studies have provided evidence regarding the benefits of developmental placement which conflict with those reviewed above. In addition to these studies of transition classes or readiness rooms, research is available that focuses on the effects of nonpromotion due to immaturity in the early elementary school years (first and second grade).

Gredler (1984) reviewed the research available on "transition classes." Of the ten studies reviewed by Gredler (many of them unpublished doctoral dissertations), only one found a positive effect of transition room placement. Several of the studies reviewed by Gredler will be summarized here. For example, Bell (1972) found that children who were diagnosed as not ready but placed in a regular first grade class anyway had better achievement test scores at the end of first grade than did first graders who had spent a year in a readiness class. The children were tested again at the end of second grade on the Stanford Achievement Test. Once again, Bell found that the children

who were eligible for the transition room program, but remained in the regular school program, performed better than children who had been in the transition room for a year. In addition, Bell demonstrated that transition room children showed a loss of self-esteem and self-confidence compared to the at-risk children who were placed in the regular first grade. This finding is just the opposite of what readiness advocates predict with respect to self esteem.

At the end of first grade, Talmadge (1981) compared the reading achievement of children who had had an extra transition year with a group of children statistically equated on reading readiness and cognitive ability. Talmadge found that children who had been in a transition room and thus had had two years of school were no better in reading achievement than similar children who had had only one year of school.

Matthews (1977) conducted an extensive study with several comparison groups. "Potential first-grade failures" (children whose parents had not agreed to recommended transition room placement) were achieving at a higher rate in the second and third grades than children who had spent a year in a transition room or who had been retained in first grade.

One of the ten studies reviewed by Gredler showed slightly more positive effects of transition room placement. Raygor (1972) compared transition room students with

children who were recommended for a transition room but whose parents refused to allow such placement and who were therefore placed in first grade. This study was the only one of the ten studies reviewed by Gredler that found a benefit for an extra year placement. At the end of first grade, the "potential first-grade failures" (the group whose parents insisted on first-grade placement) scored significantly lower than the transition room children on the Stanford Achievement Test. However, when teacher ratings of the children were compared at the third- and fourth-grade levels, the only significant difference was in reading achievement, which was in favor of the transition room children. No significant differences in teacher ratings were noted for overall academic achievement, arithmetic achievement, and language achievement level. Furthermore, the "potential failure" group was not significantly different from their regular fourth-grade classmates.

On the basis of these, as well as several other, similar studies, Gredler states that "the overall impression obtained from these studies is that the transition room, as currently operated in the American school system, does not result in adequate progress for the children being placed" (Gredler, 1984, p. 467).

Gredler also reviewed studies indicating that transition rooms are more often populated by boys and children from low socio-economic backgrounds and that transition-room teachers may offer "watered-down" curricula

because of lowered expectations. As suggested by Gredler and other researchers (Shepard & Smith, 1985, 1987), these variables could account for the depressed achievement of some children in separate classes compared to their mainstreamed counterparts.

Leinhardt (1980) conducted an interesting study in the Pittsburgh public school system in which transition room-eligible children who were integrated into a regular first grade class were divided into two groups. One group was taught with a specially devised individualized reading program within the regular classroom, and the other group was taught using regular basal instructional material. The progress of these two groups of children was compared with that of children placed in a self-contained transition room who were taught using the individualized reading program. Results of the year-long program indicated that children eligible for a transition room placement but placed, instead, in a first-grade class and given a specialized instruction program performed better than children who were given the same specialized program but who were placed in a readiness room; and better than transition-eligible children who were placed in a regular first grade but taught with conventional classroom instruction. Leinhardt attributes the results to a combination of the specialized curriculum that was used and the fact that the children were integrated into a regular classroom setting.

May and Welch (1984) conducted a study that examined

the use of developmental placement based on the results of the Gesell School Readiness Screening Test. Two hundred and twenty-three children were included in the study, representing all the children in a suburban New York elementary school which placed children in kindergarten and first grade on the basis of developmental age. Each of the children was coded according to his or her Gesell placement status. Children who were identified as developmentally immature (developmental age of 4.5 or below) were recommended to spend an extra year before kindergarten, or to "buy a year." Of this group, there were two subgroups. First, those children whose parents agreed to allow them to take an extra year were coded as "buy a year" (BAY) children. Those children who, although considered developmentally immature as a result of their scores, did not take an extra year, because their parents did not permit them to, were coded as overplaced (OP), as such children are referred to by the Gesell Institute (1980). A final group of children, those who tested as developmentally mature, was coded as traditional (TR) and placed in a typical kindergarten along with the OP children. The results of the study showed no significant differences between the TR, BAY, and OP children on referrals for special education services. There were also no significant differences between the three groups for speech and language services, remedial reading, remedial math, or counseling. Although there was a difference in the number of children referred to adaptive

motor or resource room programs, it was the BAY group that had more referrals, not the OP group. May and Welch conclude that "being overplaced did not harm the children or negatively influence their attitudes or performance. Conversely, buying a year through developmental placement did not seem to help the BAY children" (1984, p. 340).

In another publication, May and Welch (1984b) report additional test results of these three groups of children. In this second study, standardized test scores were reported for all three groups of children at the end of second, fourth, and sixth grades. On the state achievement test at the end of third grade there were no differences between the overplaced and buy-a-year group. On the Stanford Achievement Tests given at the end of second, fourth, and sixth grades, there were likewise no differences between the two groups. There was also no difference between the at-risk groups and the rest of the school district population. Thus, May and Welch again concluded that the overplaced children were not suffering the learning difficulties predicted by Gesell theory and there was no academic benefit from the buy-a-year placement.

Similar conclusions were reached by the authors of a recent study of the Boulder Valley, Colorado public schools. The authors of this study assessed the effects of kindergarten repetition for students "unready" for first grade (Shepard & Smith, 1985, 1987). In this study, first-graders who had been in an extra year program were compared

to a control group of children selected to match each case on age, sex, readiness score, and second language. The retained and control groups were compared at the end of first grade on standardized test scores, teacher ratings of achievement and teacher ratings of learner self-concept. On all but one outcome measure there were no differences between the retained and control groups. Children who were completing three years of school were the same as their matched controls with two years on standardized math test scores and on teacher ratings of reading, math, social maturity, and learner self-concept. The only difference between groups was on the standardized reading test score, where the means of the retained children and controls differed by five points, in favor of the retained children. The authors note that this gain translates into a difference of seven percentile points in relation to national norms or one month in grade equivalent units. The authors conclude that "the finding of no benefit on most measures and only a one-month gain in reading raises serious questions about the efficacy of an extra year in kindergarten" (1985, p. 5)

A recent study by May and Welch (1986) addressed a central concern of the Gesell Institute--the relations among chronological age, school readiness, and academic success. May and Welch screened one hundred and fifty-two children on the Gesell School Readiness Test, and the Stanford Achievement Test. Scores on these tests were compared with the children's chronological age, and classified by sex.

Results indicated that although the Gesell is sensitive to age differences at kindergarten (chronologically older children scored significantly higher on the Gesell), the difference is limited to the early grades of school, and diminishes as the children age. In addition, the number of false positive and false negative predictions that would have been made if the Gesell results had been used for school placement call into question the Gesell philosophy that developmental age is a more accurate predictor of school success than is chronological age.

Another interesting point was raised by May and Welch in this study. A number of studies have examined the relationship between school entrance age and later school success and have found that younger children are somewhat more likely to experience later academic difficulty. Hedges (1977) reviewed nine dissertations, over two hundred fifty articles, a number of research reports and reviews of previous research, and concluded that "earlier is not necessarily better" (p. 158). In fact, the conclusion of the review is that younger children do more poorly in school than older children. Results such as these have led many educators to support older entrance ages as well as developmental placement as a remedy to the problems faced by younger children in school (Uphoff & Gilmore, 1985). However, as May and Welch point out, other research has shown that if there is an age effect, it is relatively small, and tends to disappear in the later grades. In

addition, the lower achievement of younger children is a relative problem--that is, as school entrance ages rise to keep out those children born after September first, the September-born children replace the summer-born as the new group of youngest pupils. Several authors have pointed out the absurdity of seeking an "optimal" age for first-grade readiness if the children who are the "successful" group in one context are the "young-unsuccessful" group in another district only because of their relative age in comparison to their classmates (Gredler, 1975; Shepard & Smith, 1985; Weinstein, 1968). May and Welch conclude that "Regardless of what criteria are used to predict readiness, it will always be relative" (1986, p. 104). They further state,

Rather than spending time debating the best way to predict school readiness, the time might be spent more constructively in determining how the schools can most effectively meet the needs of children with a wide variety of individual differences (1986, p. 104).

Testing For Readiness

Another area of concern in the developmental placement of young children focuses on the process of evaluation and identification of "immature" children. According to Meisels (1987), the process of identification of children who may be at risk for learning problems has been complicated by several basic confusions about screening and readiness tests. This confusion, he contends, may have resulted in young children being denied a free and appropriate public education (Meisels, 1987). The confusion to which Meisels refers concerns the distinction between developmental

screening tests and school readiness tests. Preschool developmental screening tests are designed to identify children who may have a learning problem or a handicapping condition that could affect their overall potential for success in school. Such tests focus on performance in a wide range of areas including speech, language, cognition, perception, affect and gross and fine motor skills. In contrast, school-readiness tests are designed to measure a child's relative preparedness for benefiting from a specific academic program. Readiness tests focus on current skill achievement and performance rather than on a child's developmental potential (Meisels, 1984). In other words, readiness tests are concerned with curriculum-related skills that are typically needed by children to benefit from certain instructional programs. The results of these tests may be used to facilitate curriculum planning.

According to Meisels and others (Bear & Modlin, 1987; May, 1986) school readiness tests in general, and the Gesell School Readiness Test in particular, are not strongly associated with outcomes that are measured by later tests, or grades. However, while readiness tests do not predict performance, such tests are used for school placement purposes on the theory that if the test results show that a child is not sufficiently "mature" for a given placement, the predicted failure can be avoided by an alternative placement, thus giving the child an additional year to "mature" (Meisels, 1987). Meisels states:

The test then functions as a developmental screening test, which it is not, for it is not predictive of success or failure in school; it does not accurately sample the domain of developmental tasks, but instead, it identifies specific accomplishments . . .(1987, p. 4).

Despite assurances from the Gesell Institute that the experiences of thousands of school districts around the country offer "convincing evidence about the effective use of the Gesell Instruments" (Gesell Institute, 1980), Meisels remains unconvinced. He summarizes

In short, the use of Gesell School Readiness Screening Test, based as it is on a set of tests with unknown validity and reliability, on a theory that is outmoded and unsubstantiated, on an unverified notion of developmental age, and on a socially, economically, racially and ethnically narrow normative base--for developmental screening and class placement--is empirically unjustified and professionally suspect (1987, p. 6)

A review of the Gesell School Readiness Test in the Ninth Mental Measurements Yearbook (1985) echoes Meisel's concern. The reviewer pointed out that although the GSRT provides interesting and informative descriptions of childrens' performance at different ages, and may provide useful information to those who work with children about what kinds of behaviors are typical at certain ages, the writers of the test provide little specific information with regard to the test's validity. "It is critical that a test which is to be used for screening or diagnostic purposes demonstrate discriminant or differential validity for those purposes" (Bradley, 1985).

One exception to Meisel's criticism regarding the

untested predictive validity of the Gesell School Readiness Test is a study by Kaufman and Kaufman (1972) that examined the correlations between GSRT scores and scores on a battery built from Piaget's tasks in kindergarten, and Stanford Achievement Test scores at the end of third grade. The main purpose of the study was to compare the effectiveness of tests built from tasks devised by Gesell and Piaget as predictors of first-grade achievement. Results showed that the tests were found to be good predictors of achievement: the Piaget and Gesell batteries each correlated .64 with Stanford Achievement Test composite scores at the end of first grade. Kaufman and Kaufman quote a personal communication from Louise Bates Ames of the Gesell Institute. According to Ames, the closeness of the two tests as predictors of achievement confirms the belief that:

There is a great correspondence between our own feelings and findings and methods and those of Piaget. People who like to promote controversy are in some instances trying to show there is a conflict between the Gesell and Piaget points of view. Actually, they complement each other rather than conflict (Kaufman & Kaufman, 1972, p. 535).

In examining the study, however, one may want to be cautious in accepting both the Kaufmans' and Ames' conclusions. Kaufman and Kaufman used the Gesell School Readiness Test, but the scoring system was not identical with that used by testers assessing children's readiness for school. Instead, the Kaufmans used a numerical scoring scheme because the "unsystematic clinical method used to score GSRT was not suitable for rigorous psychometric

analysis" (1972, p. 524). Kaufman and Kaufman also omitted several subtests of the GSRT because "they were not conducive to objective scoring" (1972, p. 524). These modifications of the scoring of the GSRT for this study should be carefully considered when weighing the authors' conclusions that the Gesell School Readiness Test "ought to continue being used as a predictor of school readiness" (1972, p. 533).

In assessing Ames' claim that the Gesell Institute's philosophy is in close synchrony with that of Piaget, caution is again warranted. Advocates of the Gesellian position often use Piaget's theory to support their own, because both are "developmental" theories. Although the two models share the assumption that development precedes through a sequence of stages, the Piagetian view allows for the importance of experiential factors. Development, according to Piaget (1960), is a product of the constant interaction of maturation and experience. This means that

The environment can play a decisive role in the development of the mind; that the thought contents of the stages and the ages at which they occur are not immutably fixed; that sound methods can therefore increase the students' efficiency and even accelerate their spiritual growth without making it any the less sound (1969, p. 173).

Factors Related to School Success

A number of researchers have suggested that instead of looking at the child in order to determine if he/she is ready for the school, educators must look at the school in order to best serve the child's individual needs. In one

study, significant differences in reading achievement were found in children in ten schools, despite the children having shown equal competency predictive of reading success at the beginning of school (Feshbach, Adelman & Fuller, 1977). This result, Gredler (1978) states, shows that we must "assiduously look at the school factors that account for such variable rates in reading success" (p. 290). Other studies support the notion that learning experiences, rather than time to mature, help children to be successful in school.

Pasnak (1987) designed an intervention based on Piagetian tasks to increase the general reasoning ability of kindergarten children who were lagging in cognitive development. Because early (kindergarten) achievement on a composite of seriation, classification and conservation tasks has been associated with higher scores on the Metropolitan Achievement Test and the Iowa Test of Basic Skills, Pasnak attempted to determine whether training of the reasoning abilities central to these tasks would benefit children doing poorly in normal public school kindergarten classes. "The hope was that cognitive growth that had proceeded slowly and unevenly for these children could be significantly accelerated" (Pasnak, 1987, p. 359). The study involved an instructional program for a group of children who scored in the lowest 9% on the Educational Ability Series of general reasoning ability (the lowest percentile possible on this measure). The program consisted

of instruction on unidimensional classification, unidimensional seriation, and number conservation for four months (15 minutes three times per week during the time usually reserved for mathematics). Control children, also from the lowest 9% on the EAS, received the regular mathematics instruction during this time. The experimental children made twice the gains of the control children on the EAS, and matched their gains on mathematics achievement. Pasknak concludes that children's abilities to classify, seriate and conserve are of critical importance in early school success, and training in these tasks may be a useful tool for aiding children who are lagging in cognitive development:

The potentially large population of relatively normal children who are not making normal progress probably can be helped to make general intellectual gains via integrated, repetitive instruction on those concepts important in the development of intelligence at the outset of concrete operations (Pasknak, 1987, 362).

A study by Moers and Harris (1978) was designed to detect and to facilitate remediation of conceptual deficits among preschool and primary-grade children. Children entering first grade were administered the Boehm Test of Basic Concepts, and those children scoring below the 40th percentile were assigned to experimental or control groups. Experimental group subjects were given instruction on the concepts for which students missed items most frequently on the pretest. At the end of the school year, a small but significant difference between groups was obtained on the

Stanford Achievement Test, leading the authors to speculate that perhaps "experimental subjects learned to be better learners and/or performers on structured tasks" (Moers and Harris, 1978, p. 86.)

In addition to school-based interventions playing an important role in children's success in school, researchers have also focused on features of the home environment which may play a crucial role in helping to determine a child's readiness for, and success in, school.

Hess, Holloway, and Price (1984) examined the usefulness of maternal variables for predicting children's school readiness at ages five and six and academic performance at age twelve. The authors, aware that a large number of studies show family variables to be correlated with children's performance on tests of cognitive ability and achievement in school, wonder if these results are due to the effect of family interaction on children's cognitive development, or (as the Gesell Institute might contend), if the behavior of both parent and child is linked to intelligence or some other (inherited?) trait they both share. In attempting to answer this question, the authors used a research design and statistical analyses in which attempt was made to control the effects of contextual variables when examining the relationship between maternal behavior and children's achievement. For example, longitudinal data were used to estimate the persistence of the association between maternal and child variables over

time; independent and dependent variables were measured in different settings and at different times; and statistical techniques adjusted for the influence of maternal and child intelligence when examining relationships between maternal behavior and children's later school achievement. The results of this study show that maternal measures taken during preschool years (expectations for child's achievement, performance on a communication task, strategies for controlling the child's behavior, affective tone of mother-child interaction) predicted at significant levels both school readiness and performance at grade 6 (Hess, Holloway, Dickson, and Price, 1984). In their discussion of these results, the authors note,

This suggests that within the interaction of normal families, the essential ingredients for children's cognitive growth and school achievement may be found in any of several types of maternal behavior. The flow of information from the adult world that the child uses to construct her or his own mental structures, accumulate knowledge and develop metacognitive strategies for guiding problem-solving comes from a wide variety of maternal behavior, as well as from other sources (Hess et al., 1984, p. 1910).

Grolnick and Ryan (1989) investigated the relationship between three dimensions of parent style--autonomy support, involvement, and provision of structure--and children's school grades and achievement. The authors found that parental autonomy support was positively correlated with children's school grades and achievement, and to teachers' ratings of the children's competence and adjustment. Maternal involvement was related to achievement and to

teacher-rated competence. Grolnick and Ryan conclude that "parents exert important influences on children's school-related self-regulation and competence, particularly through their support of autonomy" (1989, p. 152).

Besides maternal variables, research has highlighted the importance of other interactions for children's success in school. Ladd and Price (1987) focused not on academic success but on social adjustment. The primary purpose of their study was to explore the transition from preschool to kindergarten and to identify factors that predict children's social functioning and school adjustment in the new classroom environment. The social adjustment criteria included measures of children's peer status in the classroom and teacher's perceptions of their classroom interpersonal and task-related behaviors. School adjustment was defined as the degree of discomfort and avoidance the children expressed within the new school environment, anxiety behaviors in the classroom, requests to visit the school nurse, and school absences. Several factors emerged as predictors of school adjustment. Two of these factors--the duration of children's preschool attendance and range of community contexts in which they had regular contact with peers--emerged as significant predictors of classroom anxiety, absences and nurse visits in kindergarten. The negative relation found between the length of the children's preschool attendance and their anxious behavior in kindergarten is "consistent with the hypothesis that prior school

experience prepares children for the stresses and demands of the kindergarten setting" (Ladd and Price, 1987, p. 1186). The authors suggest that preschoolers who have regular contact with peers in several community settings are less stressed by environmental alterations or have developed more adaptive coping styles for new or novel situations.

Ladd and Price's conclusions about the value of experiences with peers stands in stark contrast to the readiness advocates' prescriptions for dealing with the same behaviors. Anxious behaviors, fearing physical contact with peers, many visits to the school nurse, chronic absenteeism are seen as signs of overplacement, and children exhibiting these behaviors "could do much better and be much happier if they were just given more time to grow up" (Grant, 1985). Ironically, in school districts without transition or readiness classes, parents of these children would probably be encouraged to keep them home for an additional year in order to give them that time (Ilg, Ames and Baker, 1981).

A number of suggestions have been made for helping children at risk for school failure. These include extending the kindergarten program to a full day (Gredler, 1984). This, of course, assumes that all children already attend half-day kindergarten, which is not the case in New Hampshire (the only state in the United States which does not provide statewide public kindergarten). Gredler reports on research which shows that children who attended a full-day kindergarten obtained higher levels of performance in

the areas of letter recognition, letter name sounds, writing letters from dictation and matching syntax than did children in half-day kindergarten matched for chronological age and prereading ability level (Oliver, 1980). Another advocate of full-day kindergarten notes that such a program "allows time for the kinds of activities that are so important in the development of children of this age" (Day, 1986, p.30) (emphasis mine). Other studies have highlighted the importance of kindergarten. Entwistle, Alexander, Cadigan, and Pallas (1987) found that children who attend kindergarten outperform nonkindergarten children in terms of academic readiness at the beginning of first grade. In addition, they found that children with more kindergarten experience than other children (full day versus half day, or five days per week versus three) achieved higher scores on first grade California Achievement Tests, and higher grades in reading and math. Other suggestions, such as smaller classes and more hands-on, experiential learning, echo the belief that the educational activity young children engage in, and the experiences they have (in and outside of school) are critical in helping them to be successful in school.

Statement of Purpose

It seems an indisputable fact that some children, perhaps many children, are at risk for school failure. The disagreement arises when trying to pinpoint the causes of, and remedies for, poor school performance. The research reviewed here indicates that the belief held by educators

that a transition year will help children's academic progress and social-emotional adjustment, and that these benefits will be long term, has not yet been substantiated.

The purpose of the present study was to determine if developmental placement per se is related to children's academic success and self-concept. Most studies on the effect of a readiness year have focused on academic outcomes at the end of the first grade. The present study measured academic success (using class grades and standardized test scores) at the end of the third grade. An important part of the present study is the inclusion of self-concept as an outcome variable. Previous research has shown that children's self-concept is related to their experiences in school. Anderson and Adams (1985) found that preschoolers' cognitive self-perception was significantly correlated with three measures of academic readiness. In addition, they found that children attending kindergarten rated themselves higher on cognitive competence than did children of the same age who attended a nursery school. The kindergarten children were also indeed significantly higher than the preschoolers on three measures of academic readiness. The authors attribute these differences to the school curriculum experienced by the children--the more academic nature of the kindergarten. "It would appear that the nature of the school program does make a difference in children's academic attainment and their perceptions of this attainment" (Anderson & Adams, 1985, p. 118).

Other researchers have focused on the importance of self-concept of older students; especially students who have been retained in a grade and who may be at risk for dropping out. Although a popular practice for dealing with poor school performance, a number of studies have shown negative effects of grade retention: that retained children are behind comparable children who were not retained in all areas of academic achievement, in self-concept, and in attitude toward school (Chansky, 1964; Jackson, 1975; Niklason, 1984; Rose, Medway, Cantrell & Marus, 1983) and that grade retention is associated with dropping out of school (Ludwig, 1983; Rumberger, 1987). In a meta-analysis of studies which measured the effect of retention on the self-concepts of pupils who had been retained in either elementary or junior high school, Holmes & Matthews (1984) found that promoted pupils significantly outscored the retained pupils on self-concept measures.

In spite of the importance of self-concept, and of the role which school may play in students ideas about themselves, studies of the effect of readiness programs have traditionally ignored this area, focusing exclusively on academic outcomes. This is despite the fact that many critics of readiness classes equate readiness with retention --children are being "held back" while their same-age peers go on to first grade. An important question that the present study addressed is: Do children who have had a readiness year differ in self-concept from children deemed

"ready" and who go directly to first grade?

The Gesell Institute would predict that children who have had a readiness year will not differ from their traditional peers in either academic achievement or self-concept, since their immaturity has been addressed by giving them the extra time they needed. Evidence to the contrary--if the readiness children are not performing as well as their traditional peers, or if their self-concept scores are lower--would lead us to question the philosophy that an extra year is appropriate or helpful for children at risk for school failure; or that the instrument used to detect children at risk is an effective one.

Teachers' attitudes toward developmental placement were also examined in an effort to assess the amount of unique variance readiness contributes to children's elementary school performance. Although teachers' expectations of students' success is considered by many an important part of the child's performance in school, no studies of readiness programs have examined teachers' expectations of readiness students, and if those expectations might be different than those for traditional students.

Analyses of school records, children's performance on an academic self-concept scale, and teacher's responses on an attitude questionnaire and to a set of vignettes were included in order to address the questions about the effects of a readiness year on children's academic performance, self-concept and teachers' expectations for their success.

II. METHOD

Subjects

Pupils and teachers in the public elementary schools in two New Hampshire school districts participated in the study. The Derry and Timberlane school districts were chosen primarily because of their long history of using developmental placement. Children have been placed in the first grade using the Gesell School Readiness Test for over ten years. Therefore, the screening process and placement procedures are well established.

Data were collected on a total of three hundred eight fourth graders, with approximately equal number of boys and girls represented (150 boys, 146 girls, the remainder unidentified). However, Gesell School Readiness Test result were available on two hundred thirty-nine students, and it was this group that was considered the final sample. These students attended nine elementary schools, four in the Timberlane school district, and five in the Derry school district. Of the students participating, 164 were traditional students, 66 had a readiness year, and 9 were readiness refusals - children who were recommended for readiness but whose parents refused readiness placement. It was hoped that an adequate sample of these "overplaced" children would be present, allowing comparison of their progress with that of readiness graduates, but this did not

occur. This comparison was considered especially important, as the Gesellian philosophy would predict that these "overplaced" children are at risk for a number of school problems.

Forty-five teachers (approximately one third of all elementary teachers in the two districts) participated in the study. Grades taught ranged from readiness through sixth grade.

Procedure

Before beginning the study, the superintendants of the two participating school districts were contacted, and the nature of the study explained. Both superintendants gave their permission for the project, and they contacted the principals, informing them that they supported the study.

To obtain participants for the study, parents of all third graders in the Derry and Timberlane schools were contacted. The nature of the study was described, and consent for their child's inclusion in the study was requested. Approximately 65% of the parents allowed their children to participate.

The following data on each student were collected from his/her school record:

1. Developmental age determined by the Gesell School Readiness Test. This test had been administered in the spring before each child's fall entry into first grade.
2. Whether or not the child had been placed in first grade or readiness.

3. Grade-point average at the end of third grade. This number was calculated by converting A, B, C, and D grades in one school district and Excellent, Satisfactory, Poor, and Unsatisfactory in the other district into numerical values from 4 to 0.

4. Scores on the California Achievement Test taken in October of the fourth grade. The CAT yields scores in reading, math, language, and a cognitive skills index (an IQ equivalent).

The scores made available to the classroom teachers are percentile scores, and those are the scores included here.

5. Background information about each student: sex, chronological age, whether or not the student had repeated a grade; whether or not the student was receiving special education services; whether or not the student attended kindergarten.

Public kindergarten is not available in the school districts participating in this study, so attendance is not mandatory.

Means and standard deviations of student variables are presented in Table 1.

A self-concept scale (the Self-Perception Profile For Children [Harter, 1985]) was administered to students near the end of the third grade year. The test was administered by the classroom teachers.

Teacher variables: teachers in all grades were asked to complete a questionnaire, which is described below. A total of 150 questionnaires, 50 of each of 3 sets, were

distributed. Teachers were asked to send completed questionnaires, sealed in envelopes provided, to their principals. Questionnaires were collected two to three weeks later.

Of the 150 questionnaires, 47 were returned. Two of these were incomplete and were not used.

Materials

The Self Perception Profile for Children (Harter, 1985) administered to students was chosen because it measures three of the four areas which readiness advocates claim to be critical in ensuring school success - cognitive, social and physical competence. (The fourth area is emotional development). In fact, children may be assigned to a readiness class if any one of these four critical areas is deemed to be immature in development. The readiness year, then, is designed to help the child mature in all of these four areas so important to school success (Grant, 1985). A second reason for the choice of the scale is that it measures self-perceived competence. Many self-esteem scales ask parents or teachers to judge children's self-esteem. However, in testing the prediction of readiness advocates that developmentally placed children feel competent and capable, physically, cognitively, socially, and emotionally, it seems important to go directly to the source - the child. The questionnaire was administered by classroom teachers to those children whose parents had given consent.

The questionnaire administered to teachers (Appendix)

contained a collection of hypothetical situations in which the teacher was asked to make a decision about the chances of success for a student based on information about the student's past learning experiences and current level of academic functioning. The information about the student included sex, whether or not the student had attended kindergarten, whether or not the student had attended a readiness class, and ratings (high, medium, or low) on academic skills and social maturity. These five factors were systematically varied in the profiles of the students. All possible combinations of the five variables resulted in a total of 72 vignettes. Three different versions of the questionnaire were compiled, with each teacher receiving one third, or twenty-four, of the vignettes. The questionnaire also asked a number of questions about factors which might play a role in school success, and asked teachers to rate those factors as to how helpful they are in the child's success in school. Such factors include age, gender, and being placed in school on the basis of a developmental examination. Twenty factors were included in the survey, and teachers rated each factor on a scale of 1 - extremely helpful to 7 - not at all helpful.

TABLE 1
STUDENT DATA MEANS AND STANDARD DEVIATIONS

	Traditional (n=164)	Readiness (n=66)	Read. Refusal (n=9)
Chronological Age*	9.4 (.42)	10.1 (.30)	9.7 (.66)
Developmental Age** @	5.9 (.18)	5.3 (.29)	5.2 (.25)
Repeat? (yes/no)	15/146	2/61	4/5
Special Ed.? (y/n)	11/150	12/53	0/9
Kindergarten? (y/n)	146/12	52/12	8/1
Male/female	67/96	47/19	7/2

*traditional/readiness difference, $t = -11.43$, $p < .001$

**traditional/readiness difference, $t = 15.15$, $p < .001$

@measured before first grade

III. RESULTS

Student Data

Data obtained from school records - achievement test scores, scores on Self-Perception Profile, and overall grade point average - were analyzed using multivariate analysis of variance (MANOVA). One hundred eighty-one students were included in the analysis of variance. Although the sample for this study included two hundred thirty-nine students, students whose school data was incomplete (absent on the day achievement tests were administered, for example) were omitted from the analysis. Due to the small number of readiness refusals (nine), these students were also not included in the analysis. Of the 181 students included in the MANOVA, 133 were traditional students, and 48 were readiness students.

A 2x2 factorial design was employed, with placement (readiness or traditional first grade placement) as one variable and chronological age (using a median split for each placement group) as the other. The inclusion of age as a variable was considered important because students having a year of readiness are, as a group, older than their peers who were placed directly in first grade. Therefore, any difference between readiness and traditional students must be examined for the possible effect of the age difference between the groups. Students who had been retained, and who

were thus the same approximate age as readiness students but for a different reason, were not included in the analysis. Because preliminary analyses revealed no differences between boys and girls on any of the dependent variables, data were collapsed across sex on subsequent analyses.

The MANOVA revealed a significant difference between the two placement groups on all academic dependent variables ($F(5,173)=5.96, p<.001$). Univariate tests indicated that traditional students scored higher than readiness students on grade point average $F(1,177)=5.23, p<.05$, and reading, math, and language achievement test scores ($F(1,177)$ values= 13.94, 9.28, 19.18, respectively, $p<.01$). The CAT cognitive skills index also showed a significant difference in favor of traditional students ($F(1,177)=26.19, p<.01$).

No significant differences were found between groups on the basis of chronological age nor for the interaction of age and placement.

Self-perception scores also showed significant differences according to placement. MANOVA revealed a significant difference between the two placement groups, $F(6,150)=2.97, p<.01$. with the difference concentrated in two of the six self-perception areas. In athletic self-perception, readiness students achieved significantly higher scores than traditional students $F(1,155)=10.54, p<.001$, indicating that students with a year of readiness before first grade feel more competent than do traditional students in sports and outdoor games. In behavioral self-

perception, traditional students achieved significantly higher scores, $F(1,155)=4.52$, $p,<05$, indicating that traditional students are more likely than students with a readiness year to feel that they act the way they are supposed to, and to like the way they behave.

Although there was not a significant effect for age on the set of self-perception variables, $F(6,150)=1.98$, $p<.07$, one self-perception score showed a significant difference for the two age groups. Not surprisingly (given the above results), older students scored significantly higher on athletic self-perception than did the younger students, $F(1,155)=6.27$, $p<.01$. Presented in Table 2 are the means and standard deviations for all of the student variables.

An examination of the ranges of scores on the academic variables show an interesting and consistent pattern - that the difference between the two placement groups occurs not because the readiness students are performing extremely poorly, but because the traditional students are performing well. As shown in Table 3, the California Achievement Scores (in the form of percentile scores) for the readiness students are significantly lower than the traditional students, but not lower than the national norm. For example, in the Language subtest, 50% of the readiness students score above the 50th percentile. However, on the same subtest, 80% of the traditional students score above the 50th percentile.

Table 4 presents correlations of self-perception scores

with academic variables. These correlations support previous findings that academic performance is correlated with self-concept. For example, in the present sample, grade-point average and CAT subtest scores are significantly correlated with academic self-perception. However, the CAT cognitive skills index is correlated with academic self-perception only for the traditional students. If the cognitive skills index (as an IQ equivalent) truly represents ability, these results indicate that for readiness students, increase in ability does not correspond with an increase in academic self-perception.

TABLE 2
Means and Standard Deviations of Academic
and Self-Perception Variables

Variable	Placement Group				Placement E
	Readiness		Traditional		
	Older (n=25)	Younger (n=23)	Older (n=68)	Younger (n=65)	
GPA	3.00(.58)	3.10(.45)	3.19(.46)	3.28(.44)	5.2*
CAT:					
Reading	56.4(25.1)	59.7(23.7)	71.7(21.6)	72.2(20.6)	13.9***
Math	53.6(23.6)	57.2(31.7)	67.6(25.5)	69.9(24.5)	19.2***
Language	52.6(25.2)	54.1(29.1)	69.9(21.1)	73.3(22.2)	9.3**
CSI	99.4(10.4)	102.4(9.8)	109.3(12.9)	113.4(12.5)	26.2***
Self-Perception:					
Academic	3.1(.58)	3.0(.62)	3.0(.71)	2.8(.74)	.84
Social	3.0(.69)	3.0(.34)	2.9(.64)	2.8(.66)	.12
Athletic	3.3(.73)	3.0(.73)	2.9(.77)	2.5(.87)	10.5***
Physical	3.0(.84)	3.0(.77)	2.9(.83)	3.0(.71)	.06
Behavioral	3.0(.57)	3.0(.75)	3.4(.49)	3.1(.63)	4.5*
Global	3.3(.67)	3.3(.44)	3.3(.59)	3.2(.65)	.46

NOTE: New Hampshire mean scores for CAT scores are: reading, 64.0;
 language, 60.8; math, 60.4.

*p<.05
 **p<.01
 ***p<.001

TABLE 3

Ranges of Scores on Academic Variables

Variable	Traditional		Readiness	
GPA	Min. 1.6 Max. 4.0	Above 3.0=69% Above 3.0=31%	Min. 1.7 Max. 4.0	Above 3.0=50% Above 3.5=16%
CAT-Read	Min. 15 Max. 97	Above 50=84% Above 75=51%	Min. 9 Max. 97	Above 50=57% Above 75=29%
CAT-Math	Min. 4 Max. 99	Above 50=77% Above 75=47%	Min. 4 Max. 99	Above 50=57% Above 75=26%
CAT-Lang.	Min. 4 Max. 99	Above 50=80% Above 75=49%	Min. 5 Max. 99	Above 50=50% Above 75=26%
CAT-CSI	Min. 81 Max. 136	Above 100=82% Above 125=15%	Min. 80 Max. 126	Above 100=51% Above 125= 2%

TABLE 4
CORRELATIONS OF SELF-PERCEPTION SCORES
WITH ACADEMIC VARIABLES

	Traditional (n=110)						
	GPA	CAT Read.	CAT Math	CAT Lang.	CAT CSI	Chron. Age	Dev Age
Academic Self-Perception	.284*	.213*	.389*	.271*	.274*	.165*	.071
Social Self-Perception	.085	-.008	.137	.032	.015	.066	.027
Athletic Self-Perception	.031	-.026	.161*	-.015	-.078	.228*	.012
Physical Self-Perception	.108	.032	.215*	.102	.135	-.026	-.140
Behavioral Self-Perception	.032	.116	.184*	.183*	.160*	.223*	-.015
Global Self-Perception	.007	.059	.179*	.034	.060	.147	-.040
Chronological Age	-.125	-.156	-.162	-.094	-.305*		-.034
Developmental Age	.091	.194*	.094	.215*	.052	-.034	
	Readiness (n=40)						
Academic Self-Perception	.451*	.246*	.254*	.289*	.129	.112	.288*
Social Self-Perception	-.049	.126	.006	-.029	.108	-.164	.368*
Athletic Self-Perception	-.125	-.039	-.101	-.129	-.073	-.038	.142
Physical Self-Perception	-.018	.083	.083	-.018	-.016	-.198	.146
Behavioral Self-Perception	.337*	.223	.019	.040	.151	.064	.257*
Global Self-Perception	.211	.129	.071	.011	.037	-.121	.197
Chronological Age	-.002	-.006	-.030	.016	-.241*		.005
Developmental Age	.149	.342*	.208	.173	.244	.005	

*p<.05

Teacher Data

Forty-five teachers completed vignettes rating hypothetical students' chances of success in school based on five variables - sex, kindergarten attendance, having or not having a readiness year, and academic and social skills. Teachers were asked to rate students' chance of success on a scale from 1 to 7 (1= very successful, 7=not successful). Teachers of younger grades were more likely to respond to the survey - of the 45 teachers responding, only 11 were 4th, 5th or 6th grade teachers.

Stepwise multiple regression was conducted using the 5 factors in the study as predictors, and the teachers' ratings of probability of success as the dependent variable.

Two types of analyses were carried out. First, to get a composite picture of responses to each vignette, mean ratings for each vignette were computed. These mean ratings were then used as the dependent variable in a multiple regression analysis. Thus, responses were averaged across subjects, yielding a mean judgement rating for each vignette. Since a total of seventy-two vignettes were used in the study, the N for this analysis was 72. This method will be referred to as mean-score analysis.

A second type of multiple regression analysis was conducted on each subject's ratings using only that subject's responses as the dependent variable. The individual analyses were conducted to examine individual differences in judgements and how individual ratings

compared to group ratings. The means-score and individual-subjects analyses were patterned after Carlson (1982) who studied teachers' ratings of hyperactivity in children described in hypothetical vignettes. The N for this analysis (the number of teachers participating in the study) was 45.

The results of the mean-score analysis are shown in Table 5.

Judgements of probability of being successful in school were made primarily on the basis of current academic skills and social maturity. That is, children currently performing well in academics, and who have good social skills are judged by teachers as having a high chance of success in school in the coming year. The magnitude of the beta weights indicate that social maturity was the major variable used to predict success in school ($B = .72$), with academic skills being highly important as well ($B = .62$). Together, these two variables accounted for 92% of the variance in the analysis. Although readiness status showed up in the analysis as a statistically significant predictor, in reality it adds little (less than 1%) to the explained variance. Gender and kindergarten attendance were not used by teachers to predict a child's success in school.

Individual-subjects regression equations for each subject's ratings were also computed. Although there was some variability between subjects in terms of which combinations of factors were used in predicting school

success, results were quite similar to the group regression equation. Forty-four of the forty-five teachers used academic skills and social maturity as significant predictors. Ten teachers also used readiness as a significant predictor. Four included gender and three used kindergarten as important in judging probability of success.

Multiple R values for the 45 subjects ranged from .66 to .97 (median = .92) R² ranged from .43 to .94 (median = .84). These results demonstrate that teachers tend to give greater emphasis to social maturity and academic skills than to other pupil characteristics in predicting school success.

Although teachers emphasized social maturity and academic skills in predicting school success, they clearly support the developmental screening and placement of students. When teachers were asked to rate the importance of a number of factors in students' success in school, being placed on the basis of development age was given a mean rating of 1.6 on a scale of 1 (very helpful) to 7 (not at all helpful). In fact, of the twenty factors included in this part of the teacher questionnaire, only three other factors were rated more important than developmental placement: having a stimulating home environment, being emotionally mature, and having good peer interaction skills. Table 6 presents the mean teacher ratings of these factors.

TABLE 5

Results of Stepwise Regression

Predictors	Beta	R	R2	df	t
Social Maturity	.72	.72	.52	1,70	21.72***
Academic Skills	.62	.95	.91	2,69	18.84***
Readiness	.09	.96	.92	3,68	2.77*
Gender	-.02				
Kindergarten	-.02				

Final $F(3,68) = 277.6, p < .001$

* $p < .05$

*** $p < .001$

TABLE 6

Mean Teacher Ratings of Factors
Which May Influence Success in School

<u>Factor</u>	<u>Rating*</u>
Having a stimulating home environment	1.3
Being emotionally mature	1.5
Good skills in peer interactions	1.5
Being placed in school on the basis of a developmental screening	1.6
Attending kindergarten	1.9
Good language skills	1.9
Being physically mature and well coordinated	2.0
Having parents who are involved with the school program	2.3
Being one of the oldest in class	2.3
Having a year of readiness prior to first grade	2.3
Having a high tolerance for frustration	2.4
Having highly educated parents	2.5
Having a high IQ	2.6
Attending nursery school	3.4
Being a girl	3.5
Being an only child	3.7
Attending daycare as an infant or toddler	4.1
Being a boy	4.2
Being one of the youngest in class	5.5

*Code: 1=Very Helpful to 7=Strongly Interferes

IV. DISCUSSION

Previous research has found that a year of readiness or transition class does not seem to benefit children - that is, that readiness children and their traditional peers show little difference in academic achievement, and "overplaced" children do not fare more poorly than the other two groups (May and Welch, 1984b; Gredler, 1984). The results of the present study, therefore, support those conclusions in finding that students who attended a readiness year are not performing as well as their traditional peers in classroom grades and standardized test scores three years later. The results of the present study are particularly interesting when one stops to consider several facts. First, teachers in these school districts support developmental placement, and consider it helpful in children's school success. Second, developmental placement is well established in the two districts participating in this study. In fact, one of the two districts has been placing children in readiness classes for over twenty years. Third, on a statewide level, readiness placement is widely supported, both in philosophy and practice. Currently, approximately 70% of New Hampshire schools use developmental placement (compared to 20% nationally). All of these factors seem to make a case that if readiness placement can be beneficial to some students, then they would be the students in this study.

Advocates of developmental placement will argue that without the readiness year the performance of the readiness students would be much worse than it is now. It is a limitation of the present study that an adequate sample of readiness refusals, or "overplaced" children was not included. The comparison of readiness refusals with readiness graduates would have yielded important information and shed light on this question. Are the readiness refusals indeed doing poorly in school? Are they suffering from the stress that comes with being asked to do more than they are ready to do? Although these are questions that must be left for future research to answer, the results of the present study do warrant our stopping to reexamine and rethink the philosophy and practices of developmental placement.

As stated above, a number of researchers have questioned the use of the transition or readiness class in assisting students who may have difficulty in the traditional first-grade classroom. Few would deny that children come to school with varying levels of the skills and abilities needed to succeed in school. However, how to maximize each child's chance of success in school is widely debated.

The results of the current study call into question the Gesell Institute's point of view that children will be most successful in school when they are placed in school on the basis of a developmental examination. According to this philosophy, children "at risk" for school failure can be

identified, and through placement in a readiness class, can be given the time needed to mature. With the benefit of this extra time, these children should be as successful as their peers who go directly to first grade.

However, the results presented here show that children who have had a readiness year are not as successful in school as their traditional peers. The differences between the two groups of students is seen in class grades as well as standardized test scores in reading, language and math.

Interestingly, despite the difference in academic achievement, there was not a corresponding difference in academic self-perception. Previous research which has shown a relationship between achievement and self-perception (Wattenberg & Clifford, 1964; Ozehosky & Clark, 1970; Stipek & Hoffman, 1980; Harter, 1982) and which is supported by the correlations between the outcome variables and academic self-perception presented above, makes these findings somewhat surprising. One possible explanation is that students' self-perceptions are a result not only of their comparisons of their own accomplishments to others', but also of their comparisons of their achievements to their self-expectations. Entwistle, Alexander, Pallas and Cadigan (1987) found that first graders' self-expectations significantly predicted academic self-concept even while actual achievement did not. Perhaps readiness children, due to their placement in a readiness class rather than first grade, come to have lower expectations for their own

performance than do students placed in first grade. Subsequently, in third and fourth grade, their self-perception is not different from students with higher grades and test scores because they expect not to perform as well. That is, the standards of comparison for the two groups differ, so the groups feel equally competent in comparison with their own standards.

Issues in Developmental Testing

A number of alternative interpretations of the academic differences between readiness and traditional students are possible. One, suggested by Shepard and Smith (1985) in their study of kindergarten retention in the Boulder, Colorado schools, is that the Gesell School Readiness Test may be measuring intelligence rather than maturity or "developmental age". Because the Gesell lacks research to establish the discriminant validity of their measures, there is little evidence to support the claim by Ilg et al (1978) that the Gesell tests measure something different from IQ (Shepard & Smith, 1985). A number of other studies have challenged the Gesell Institute's claim that assessment of developmental maturity provides the most useful and reliable information on which to base the placement of children in school. Bear and Modlin (1987) found that the Gesell Preschool Test (which contains many of the same test items as the Gesell School Readiness Test and is used to screen children before kindergarten entrance) made no significant contribution to the discrimination of

promoted and nonpromoted children after the effects of reading and math achievement (as measured by standardized tests administered during the kindergarten year) had been accounted for.

In addition to the lack of validity information, the Gesell tests do not supply reliability data, giving us no information about how stable or dependable test scores are for an individual child. Shepard and Smith (1985) note that only one study ever reported a reliability coefficient. Based on 103 kindergartners, Kaufman (1971) reported a reliability coefficient of .84. However, as noted above, Kaufman imposed a numerical scoring scheme because the clinical method used in interpreting the Gesell School Readiness Test results was not conducive to a conducting a psychometric analysis. Thus, a reliability coefficient of .84 is probably higher than might be otherwise expected with the GSRT. The importance of these observations becomes clear when considering the important placement decisions made on the basis of the results of this test. Shepard and Smith demonstrate that even given a reliability of .84, the corresponding standard error of measurement was 5.3. This means that if a child was given a developmental age of 5 on Kaufman's scale, the 95% confidence interval would include children with developmental ages of 4 1/2 and children with developmental ages of 5 1/2. Thus, the 95% confidence interval extends over a developmental age span of an entire year--making it difficult to distinguish those who

are ready for school (developmental age of 6) and those who are not (developmental age of 5) (Shepard & Smith, 1985).

This lack of reliability information raises questions about the "developmental status" of the children in the present study. If we assume a fairly high reliability coefficient of .85 (higher than is probably the case), the mean developmental ages and standard deviations obtained for this sample allow us to conclude that some children, especially those in the readiness group, would have been "misdiagnosed." In other words, some of the children tested as "immature" would actually have been ready for first grade. If we assume a lower reliability of .50, then a greater number of the readiness children, and some of the "overplaced" children would have been incorrectly labelled "not ready." These findings underscore the seriousness of the omission of reliability information by the Gesell Institute, especially when the test results are used to make so important a decision about a child's school program as an extra year before first grade.

Immaturity Versus Ability

The results of the present study are consistent with the hypothesis that the children labelled "immature" on the Gesell actually differ in ability from children labelled "ready" for first grade. Thus, this difference in ability would account (at least partially) for the student's score on the Gesell at age 6, and the performance on academic tasks (and the difference in the CAT Cognitive Skills Index)

in third and fourth grade.

A second possible explanation for the difference in school performance between the two groups is that a year in a readiness class is not an appropriate or helpful experience for children at risk for difficulty in school. The Gesellian philosophy states that each child's genetically set inner timetable is the most important factor in determining whether or not he or she will be ready for school:

...the level of an individual's own behavior development which depends on the level of bodily development rather than on something that somebody has or has not done to or for him - will determine the level at which he is performing and the grade for which he is suited (Ilg, Ames, Haines & Gillespie, 1978, p. 11).

Other researchers and educators, however, stress the importance of the child's experiences. These include the experiences the child has before he/she comes to school, such as interactions with parents or the quality of the home environment. They also include the experiences the child has in school, such as the size of the classroom or the instructional methodology used. One study reported that reducing classroom size to no more than seventeen students in early elementary grades resulted in significant increases in grades and standardized test scores (Mueller, Chase & Walden, 1988). Other researchers point to achievements made by students in full-day kindergarten programs (Brandt, 1986). Stevenson, Parker, Wilkenson, Hegion and Fish (1976) suggest that it would be most helpful to identify

kindergarten children who lack specific prerequisite skills needed for reading and mathematics achievement, and then to teach those skills. They argue that the tests currently used to screen for school readiness provide little information about the component skills involved in reading and arithmetic:

If we assume that the relation between early knowledge of the alphabet and numbers bears not only a predictive but also a causal relation with later achievement, efforts could be made to teach these two representational systems before school or during kindergarten (Stevenson, Parker, Wilkenson, Hegion & Fish, 1976, p.399).

Another area of research exists which calls into question the philosophy that the best, or only, way to reduce the incidence of school failure is to allow unready children extra time to become ready. In contrast to Gesellian maturational theory and the policies based upon it are those of researchers who stress early intervention and early education as important factors in children's cognitive, social, and emotional development. Research has supported the belief that environmental interventions before the child reaches school age do affect children's development in the early years.

Clarke-Stewart (1984) found that children attending day-care centers, full or part-time, scored consistently higher on measures of social, emotional and intellectual maturity than children in homes with parents or other caregivers. She also documented significant and systematic differences between the environments in which the day care

children spent their days and those of children cared for at home in physical facilities, educational emphases, and the composition and characteristics of children's social environment. Significant relationships were found between children's performance on tests of social and intellectual competence and variation in qualities of the program and the composition of its participants.

Other evidence supporting the effects of early education comes from a review of literature evaluating the effectiveness of Head Start programs. In this review, Schweinhart and Weikart conclude "Good preschool programs for children at risk of school failure do better prepare them for school both intellectually and socially" (Schweinhart & Weikart, 1986, p. 53); that is, children who attend a good preschool child development program demonstrate less need for special education classes and less chance of being retained in grade. This greater school success leads to greater life success in adolescence and adulthood, as demonstrated by lower rates of delinquency, teenage pregnancy, and welfare usage and by higher rates of high school completion and employment (Schweinhart & Weikart, 1986). An important difference in philosophy exists between these early intervention programs and the Gesellian approach. The early intervention approach holds that many young children are at risk for learning problems due to the child's environment and early experiences. These early experiences, it is believed, have a major effect upon

development and learning, and greatly influence the degree to which a child reaches his or her full potential (Peterson, 1987). Thus, a child can be considered "at risk" years before he or she enters school, and programs initiated to address, and possibly alleviate, that risk. One author states that the ages of two or three "seems an ideal time to facilitate development and to capitalize upon a child's readiness for learning" (Peterson, 1987, p. 6.) In contrast, the Gesell Institute stresses the child's genetically set maturation schedule as the prime factor in shaping development, and the child at risk for school failure is the child being asked to do more than his developmental level will allow.

Further research has demonstrated that the effectiveness of early education programs is not limited to children of low socioeconomic status. The Brookline (Massachusetts) Early Education Project (BEEP), a program consisting of parent education, diagnostic health and developmental monitoring, and education programs for children beginning at age two and lasting to age five, included a diverse sample of families (Pierson, Walker & Tivnan, 1984). The children enrolled in BEEP were compared to a no-treatment group similar in family background characteristics during the spring of the second grade. The results obtained from the observations of children's classroom learning behaviors showed that the rate of difficulty for BEEP participants was only one-half that

found for the randomly selected comparison group (14% of BEEP children having difficulty in classroom learning behaviors versus 28% of control children). The behaviors included skills such as working independently, following directions, resisting distractions, completing work successfully, getting along with other children, and involvement in classroom activities.

Coincidentally, children lacking these very behaviors would be considered "immature" by the Gesell Institute, rather than, perhaps, lacking in the experiences helpful in their development (Ames, 1967). As Ilg et al. state, "...regardless of environment and regardless of individual differences, many behaviors do develop through basic stages, common to all" (1978, p.3). While the maturational theorists hold that these important skills so necessary for school success emerge as the child grows, the BEEP study suggests a different set of processes may be responsible.

The overall advantage for BEEP participants over the control children also included a significant difference in reading skills, with 19% of the BEEP children reading below grade level in the second grade, compared to 33% of the control children. These differences prompted the authors to conclude that, with a combination of early education, information and support for parents on such topics as normal child development, behavior management and criteria for choosing high quality child care, unnecessary failures in elementary school can practically be eliminated.

Research focusing on the importance of early experiences for success in school does not deal only with academic performance, however. As the Gesell Institute points out, readiness for school includes emotional and social readiness as well as intellectual ability. Ladd and Price (1987) emphasize social and emotional adjustment in their study of children' adjustment following the transition from preschool to kindergarten. One of the findings of their research is that extensive social experiences, such as developing ties with peers in a variety of settings seems to be helpful in promoting later school adjustment. The authors suggest that the use of a "buddy system", or pairing children with familiar peers or friends may be an effective (and economical) way of promoting early school adjustment.

Thus, a number of intervention programs have been demonstrated to be effective in helping reduce children's difficulties in school. Further research should be conducted to test which of these, or other, alternatives prove most helpful to those children likely to have difficulty succeeding in school.

Final Comments and Caveats

Overall, the student data in the present study seems to indicate that the placement of children in readiness classes based on scores on the Gesell School Readiness Test does not support the philosophy that extra-year programs will give the "at risk" child a boost in academic achievement.

The teacher data in this study indicate that teachers

rely primarily on a student's current academic performance and social maturity to predict whether or not that child is likely to succeed in school in the future. This is not an unexpected result - in fact, one might consider it simple common sense. It is interesting, however, that although teachers in the two school systems represented in the study support developmental placement, and believe it to be a useful educational practice, they do not consider it an important factor when predicting how likely it is that a child will succeed in school. One possible explanation for these results is that readiness is considered valuable and important primarily by teachers in the early elementary grades, Readiness through third. Teachers of older students - fourth through sixth - may be less enthusiastic due to their being more removed (temporally) from the readiness year.

The results of this study must, of course, be read with caution. Not all fourth graders in the two participating school systems participated in the study. The sample was limited to those children whose parents gave permission for their children to participate. It is possible that the traditional and readiness groups do not represent the entire population of traditional and readiness students. Thus the differences found in this study might be attributed as much to problems in adequately sampling the population as to the effects of a readiness year. Secondly, because there was an insufficient number of "overplaced" students--children whose

parents refused the recommendation of a readiness year--it is impossible to know how the readiness veterans in this study might be doing if they had not had a readiness year. This is an important point, and further research in this area must address this gap. However, an important challenge can be made to the claims by the Gesell Institute that children can be reliably diagnosed as "immature" and that an extra year before first grade will allow those children to be as successful as their "ready" peers. Students who invest an extra year of their lives, and school systems that invest money and valuable personnel should know, beyond a reasonable doubt, that these programs are effective. The present study raises questions about that effectiveness.

On the basis of this study, it seems appropriate to recommend that school systems carry out further research on the effectiveness of readiness programs. Access to all students' records would enable school personnel to assess the effectiveness of these programs for students judged to be too "immature" to begin first grade with their age-mates. The effect of parents' refusal of the readiness placement could also be assessed. Then, appropriate policy decisions could be made by the schools for the continuance, or for alternatives to, the placement of some children in readiness classrooms.

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APPENDIX

Description of Information Factors:

Sex: Male or female

Kindergarten/nursery school: yes or no (whether or not the child attended kindergarten or nursery school)

Readiness: yes or no (whether or not the child attended a readiness class)

Composite rating of academic skills: Each child is ranked on academic skills in relation to his or her classmates by the child's teacher. A child at the very high end of this scale has a very high vocabulary, grasps concepts quickly, and is performing at a level above expectations for his or her grade. A child at the very low end of this scale is struggling with grade level material in all academic areas, finds it difficult or impossible to complete assignments, and speaks and reads poorly.

Index of social maturity: This scale measures age appropriate relations with adults and other children and the child's ability to work independently in the school setting. A child at the high end of this demension shows leadership, works cooperatively with classmates, can follow directions without repetition, works independently and takes care of his or her things. A child at the low end of this continuum can't follow directions without repetition, relates to peers through verbal and physical aggression, can't listen to teachers or peers without interrupting, and has difficulty sitting still for more than a few minutes at a time.

Student number _____

Sex:

Background:

_____ Nursery school/kindergarten

_____ Readiness (1 year)

Composite rating of academic skills:



Index of social maturity



Assume that this child is entering your class this year. On the basis of the above characteristics, how would you rate the probability of his or her success during the coming academic year?

Extremely
Likely
1

2

3

4

5

6

Extremely
Unlikely
7

Below is a list of factors which may or may not play a role in children's success in school. Please read each item, and decide whether or not that factor would help a child to be successful in school, or would interfere with the child's success. Then, consider how much that factor helps or hinders a child's progress, and respond by circling the appropriate response next to the item.

A response of 1 means the factor is very helpful in the child's success in school, 7 means that the factor seriously interferes with the child's school success, and 4 means that the factor neither helps nor hinders successful school progress.

Naturally, every child is unique and many other factors are involved in determining whether a particular child succeeds in school. But for now, try to picture a 'typical child' and judge the importance of these factors in that child's school career.

	Very Helpful				Strongly Interferes		
	1	2	3	4	5	6	7
Attending day care as an infant or toddler							
Attending nursery school							
Attending kindergarten							
Being one of oldest in class							
Being one of youngest in class							
Having highly educated parents							
Being a boy							
Being a girl							
Being physically mature and well coordinated							
Having a high IQ							
Having a stimulating home environment							
Being emotionally mature							

**Being placed in school on the
basis of a developmental
screening**

**Having a high tolerance for
frustration**

**Having parents who are involved
with the school program**

**Having a year of readiness
prior to first grade**

Being an only child

Good language skills

**Being able to communicate
well with adults**

Good skills in peer interactions