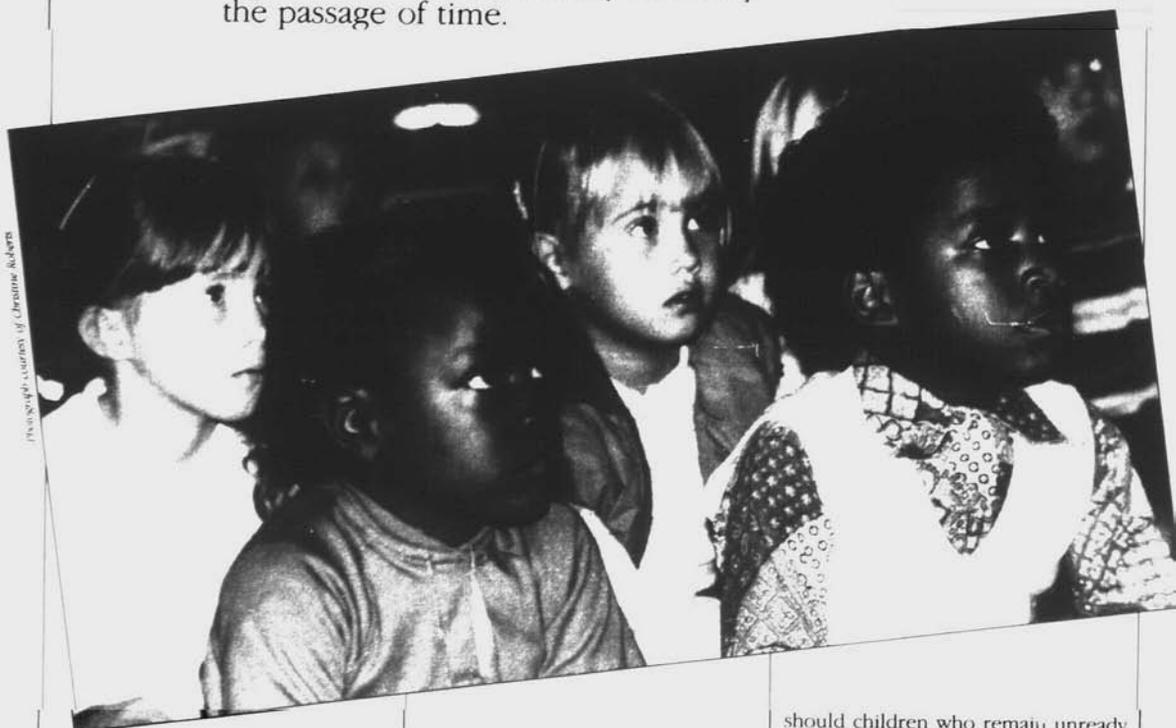


Synthesis of Research on School Readiness and Kindergarten Retention

There will *always* be a group of youngest children who lag somewhat behind their kindergarten and first grade classmates; the problem is relative. Before we create a plethora of new programs, we need to think twice about trying to "solve" a problem that is invariably cured by the passage of time.



Every September in the United States more than three million children begin formal schooling with their first day of kindergarten. These children differ tremendously in their readiness to learn and their ability to follow directions. Many of the youngest children—those who just made the entrance-age cutoff date—seem barely ready to meet the expectations of school.

Great diversity in cognitive development and social maturity creates a teaching problem that educators are constantly trying to resolve. Should the school district change its entrance-age policy to remove the youngest children? Can these apparent differences in readiness be assessed and used to decide who should be in school and who should not? If schools are obliged to admit all students,

should children who remain unready for first grade be kept in kindergarten or special transition programs for an extra year?

Current educational reforms and the desire to raise standards have intensified the problems of differential readiness. Third grade exit requirements are translated into uniform expectations for second graders, which in turn dictate absolute standards for first graders and then kindergartners. At both the state and local level, many policymakers are

contemplating testing programs to determine who is prepared to begin and to leave kindergarten.

Several bodies of research inform these issues of entrance age, school readiness, and early-grades retention. In some cases common-sense impressions about what works are at odds with the accumulated evidence. What follows is a summary of relevant research and policy implications.

The Problem of Being Youngest

Numerous researchers and reviewers have addressed the question of within-grade age effects, especially for first grade. When the children who are youngest in their grade are compared with their older classmates, they are nearly always less successful (Beattie 1970, Bigelow 1934, Carroll 1963, Davis et al. 1980, Green and Simmons 1962, Hall 1963, Halliwell and Stein 1964, Kalk et al. 1981, King 1955). However, the achievement differences that are "statistically significant" in these studies are not necessarily very large. For example, based on sample sizes of 8,500 per grade, Davis, Trimble, and Vincent (1980) found that children who were fully six years old when they entered first grade were nine percentile points ahead of children who were only five when they started first grade.

Similarly, we also found that first graders who were in the youngest three months of their class scored on average at the 62d percentile in reading compared to the oldest three-month children who were at the 71st percentile (Shepard and Smith 1985). (In math, the difference was only 6 percentile points.) Thus, a major point to be made when we are considering practical rather than statistical significance is that achievement differences between the oldest and youngest first graders are small, on the order of 7 or 8 percentile points.

We further analyzed the age trend in first grade by ability strata (Shepard and Smith 1985). There was virtually no difference in achievement between the oldest and youngest age groups for children who were above the 75th or 50th percentile points of their respective age intervals. The overall age trend seemed to come almost entirely

from the children who were below the 25th percentile of their respective age groups. Although one would not wish to draw any policy conclusions based on only one study, it should be noted that the disadvantage of achievement experienced by some younger children in relation to older classmates may more likely be a *combination* of youngness and low ability.

A second major point, looking over a number of research studies, is that even the small disadvantage of youngness eventually disappears, usually by about third grade. From analyses based on National Assessment data, Langer, Kalk, and Searls (1984) noted that the effects of being old or young in grade tended to diminish as grade level increased. For Halliwell and Stein (1964) to find achievement differences between the oldest and youngest fifth graders is the exception among research studies rather than the rule. In our own research, we found no difference in math achievement or in reading achievement between the oldest and youngest children in either the third or fourth grade (Shepard and Smith 1985). Miller and Norris (1967) found that a difference between the oldest and youngest children on readiness measures was no longer apparent at the end of second, third, or fourth grades.

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They attributed the lack of differences due to age to the effectiveness of an ungraded program in *individualizing* reading instruction. Their observation about individualization may have wider import. In reviewing the literature on age effects, Weinstein (1968-69) proposed that whether an initial deficit for young first graders would persist into higher grades depended on the attitudes and expectations of teachers in responding to the ability range of normal first graders.

A few studies have contributed greatly to the impression that the problem of being youngest is grave and potentially devastating. These studies note that children who are youngest in their class are more likely to repeat a grade (Langer et al. 1984, Uphoff 1985), to be referred to special education (DiPasquale et al. 1980), and to be labeled as learning disabled (Diamond 1983, Maddux 1980).

Gredler (1980) urged caution, however, in the interpretation of these later indicators since they are more susceptible to teacher biases than are achievement tests. Referral rates and retention decisions are influenced by the opinions of teachers who might either expect young children to have difficulty or decide not to retain a child who is already older. We conducted a study to see whether kindergarten teachers consider such factors as a child's age when they form judgments about the likelihood of success in first grade or the desirability of retention (Shepard and Smith 1985). In a policy-capturing experiment, 68 percent of kindergarten teachers gave some important weight to age in their recommendations for retention or promotion (with sex, physical size, social maturity, and academic skills held constant). In practice this means that a child lagging behind at the end of kindergarten might be recommended to repeat kindergarten if he were five years and nine months old. But a child with equally deficient skills who was already six years and eight months old would be passed to first grade. Clearly if teachers are more willing to hold back younger children, retention data cannot be used to evaluate the effect of youngness.

Current research in special education is also consistent with the interpretation that higher referral rates for

“When the children who are youngest in their grade are compared with their older classmates, they are nearly always less successful. However, the achievement differences are not necessarily very large.”

Highlights of Research on School Readiness and Kindergarten Retention

On being youngest. Children who are youngest in their first grade class have slightly lower achievement rates, but the difference is only 7 to 8 percentile points, and disappears by about third grade. Schools should reexamine their referral and retention practices if they find that the majority of targeted students are the youngest in each grade. Unwarranted referral or retention may have negative effects later on.

On entrance-age policy. Kindergarten entrance age has increased gradually over the past 30 years. A child who was among the older students in class in 1958 would today be one of the youngest. In most states children have to be five years old before 1 October to start kindergarten. Regardless of the entrance age requirement, however, the youngest children are always at a slight disadvantage. Thus, raising the entrance age is a temporary solution to a problem that is relative rather than absolute.

On voluntarily waiting a year to start school. Many parents are choosing to keep their children out of school an extra year so that when they do start school, these children will be in the less at-risk group of older students. These children may, however, eventually be insufficiently challenged. Furthermore, schools should not encourage parents to keep their children home because this policy invariably increases students' age differential in kindergarten and first grade.

On assessing children's readiness for school. Many of the tests being used to place and evaluate children were designed for other purposes, such as helping teachers plan instruction. None of the available tests is accurate enough to screen children into special programs without a 50 percent error rate.

On kindergarten and first grade retention. By the time they complete first grade, children who have repeated kindergarten do not out-perform comparison students; they do, however, have slightly more negative feelings about school. There is no achievement benefit in retaining a child in kindergarten or first grade and, regardless of how well the extra year is presented to the child, the child still pays an emotional cost.

younger children within a grade can be explained by teacher expectations and the slightly lower average achievement of the youngest children. Pugach (1985) found that children are placed in special education in mildly handicapped categories largely on the basis of teachers' referrals, and that teachers have in mind a need for one-to-one instruction or other remedial services rather than a scientific conception of handicap. In a study of learning disabled children, we found that only 43 percent were validly identified, the majority of children labeled LD had other learning needs, from very serious to extremely mild, which were generally served by additional instruction once the child was placed in special education (Shepard and Smith 1981, 1983). Given the widely acknowledged fallibility of the LD label, there is no reason to believe that children who are youngest in their grade develop real handicaps. There is, however, genuine cause for alarm

that schools are so willing to affix a handicapped label to a child who is slightly behind in achievement.

In summary, the "age effect" literature does verify that children who are youngest in their first grade class are at a slight disadvantage. This is hardly surprising since an 11-month period of growth and development is a significant portion of a lifetime for six-year-olds. However, the difference between oldest and youngest children is smaller than popularly believed, only about 7 or 8 percentile points on achievement tests. Furthermore, most studies show that the age effect disappears by about third grade. Whether and how soon the age effect disappears depends on the responsiveness of the school program to individual differences. Differential referral and retention rates for children who were the youngest when they entered school are not valid indicators of the youngness problem because they are contaminated by teacher beliefs about

age. However, the increased probability for younger children to be held back or placed in special education should be of concern in and of itself because these actions may have negative consequences greater than the slight achievement disadvantage that prompted them. (See reviews by Holmes and Matthews 1984, regarding the negative social-emotional effects of nonpromotion, and by MacMillan and Meyers 1979 on the elusive phenomenon of special education stigma.)

Entrance-Age Policy

Over the past 30 years the national trend has been slowly but surely to raise the age for entrance to kindergarten. In 1958 most states required kindergartners to be five years old by December 1 or January 1 (Educational Research Service 1958). Surveys of school districts in 1963 and 1968 reported that when the entrance age was changed, it was nearly always raised, requiring that children be a month or two older to start school (Educational Research Service 1963, 1968). In 1968 the dominant policy was a date after November 30, but 25 percent of the schools had moved to September or October 1 dates. By 1975 the percentage with September or October 1 cutoffs had increased to 35 percent (Educational Research Service 1975), although admission dates after November 30 remained the most prevalent district practice.

In 1985 a survey of states (rather than districts) revealed an even more substantial shift in policy. Now the dominant practice is to require that children be five before October 1 to start kindergarten; only 20 percent of the states (mostly in the northeast) have entrance cutoffs after November 30 (Education Commission of the States 1985). Missouri has elected to raise its entrance age a month each year so that in 1987 children must be five by July 1. In Colorado several local districts have also adopted June or July cutoffs (Management Information Services 1982). These continuations of the long-term trend into summer dates suggest that national entrance policies will not necessarily stabilize once they accommodate to the September rather than mid-year norm. Earlier and earlier cutoff dates have raised the average age of kindergart-

ners. A child who might have been in the older half of the class in 1958 might now be one of the youngest children in some kindergarten classes.

Rhetoric surrounding decisions to raise the school entrance age has focused almost entirely on the unreadiness of the youngest children. Will moving the entrance age solve the problem of youngness? If children must be fully five before the start of kindergarten, will short-term and potentially long-term learning problems be prevented? Obviously many policymakers believe so. But for entrance-age change to be the solution, the youngness dilemma must be an absolute problem rather than a relative one. In other words, the cognitive and social demands of kindergarten must be fixed in such a way that they are consistent with what five-and-a-half-year-olds can do but are too much for children who are just barely five. Ad-

vocates seeking to raise the entrance age construe the problem in this way. All of the research evidence, however, offers a convincing case that the youngness problem is relative, not absolute.

The youngest children are at a disadvantage whether they enter school at 4.7 years of age in a district with a February cutoff, at 4.9 in a district with a December entrance age, or 5.0 in a district where September 1 is the deadline. 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 respective classmates (Gredler 1975, Weinstein 1968-69).

The relative nature of the age effect is also seen between countries. The



Photograph courtesy of Christine Rowley

Is it possible to assess readiness directly? A school superintendent or state legislator should remember one overriding rule for determining test validity: validity depends on how a test is used.

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International Study of Achievement in Mathematics (Husén 1967) found that "children with birthdays toward the end of the school year tend to do less well in all countries" (p. 228). This was true in England where the mandatory age of school entry was five and in Finland and Sweden where compulsory attendance does not begin until age seven. To contest the idea that older entrance ages would be a panacea for differential readiness, Gredler (1975, 1980) cited several studies including those by Malmquist (1958) and Jinks (1964). Speaking of younger seven-year-olds in Sweden, Malmquist lamented that large differences in intellectual development made it impossible for the same method of teaching to be effective with all the pupils. In a British study, Jinks (1964) again found that teachers praised the learning abilities of their *older* pupils, who would have been the *youngest* children in the United States.

Because the youngness problem is relative, raising the entrance age would provide only a temporary solution to the perceived problem. In a district with a September 1 cutoff, children with summer birthdays are deficient compared to their classmates. If the district responds by adopting a July 1 cut-off, in a short time normative comparisons will readjust and children with May and June birthdays will be at risk.

Individual Decisions vs. School Policy

States and local districts cannot solve the youngness problem by raising the entrance age because they would merely create a new youngest group. But should parents individually consider holding out of school a child who is just past the cutoff? Many parents have obviously already made this decision since there are significantly fewer children in the first month past the cutoff than in any other month (Shepard and Smith 1985). Very likely, parents believe that by waiting a year their child will have the benefit of being the oldest in the class. There are no controlled studies available on this older age group. Advocates who advise parents to keep their children at home another year cite the youngness research summarized here; they claim

only good and no ill effects could come from this practice (*A Gift of Time* 1982). In the absence of evidence, however, greater caution might be advisable. Anecdotally, we know that children who are over-age for their grade are very aware of being older (Shepard and Smith 1985), but the attitudinal effects of being oldest or different have not been studied systematically. Parents should at least consider the possibility of too little challenge as well as too much challenge. Longer-term problems that we know about from the retention literature might also be considered, such as a girl reaching puberty in fourth grade or a 19-year-old young man being unwilling to finish high school.

Even if there is little research evidence about what parents should do, there is a firmer basis for saying what districts should do. Districts should *not* encourage parents to keep their young five-year-olds at home. If a district or school gives this kind of advice, the result will very likely be an increase in the heterogeneity of kindergarten and first grade classrooms because middle-class parents are more likely to follow the advice. Just as "Sesame Street" widened the gap between middle-class and poor children (Cook et al. 1975), middle-class families will be more able to know about and take advantage of this educational wisdom. In our study of kindergarten retention, many lower socioeconomic families resisted an extra year of (half-day) kindergarten specifically because mothers could not afford to stay home or to pay for preschool (Shepard and Smith 1985). In one school where the youngest children were systematically asked to repeat kindergarten, all the parents of children with the highest readiness skills agreed and the parents of children with the lowest skills refused. As a consequence, the diversity of the first grade class was dramatically increased the following year.

Thus, school districts should not foster a hidden policy of encouraging parents to keep their young five-year-olds at home; the parents who are most likely to heed this advice do not necessarily have the least ready children. Teaching problems associated with great diversity in kindergartens will increase, not diminish.

Assessing Readiness

If a uniform entrance age cannot address the problem of differential readiness, is it possible to measure readiness directly? Can a test be used to decide who should stay out of school or who should be placed in a less-demanding kindergarten program? Numerous school readiness or screening instruments exist. Many are intended specifically to assess reading readiness, but others include a broader array of social and developmental skills relevant to a child's adjustment in school.

What should a school superintendent or state legislator—who is not interested in psychometric properties or validity coefficients—know about school readiness measures? First, there is one overriding rule for determining test validity: validity depends on how a test is used. In the case of school readiness measures, this means that some tests might be perfectly good for teachers to use in making day-to-day instructional decisions but would not be good enough (technically or in a court of law) to be used to place a child in a special school program. The more crucial the decision for an individual child, the greater are the demands for test validity evidence and due process.

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Scientific knowledge underlying readiness assessment is such that none of the existing tests is sufficiently accurate to justify removing children from their normal peer group and placing them in special two-year programs. In part the lack of high correlations with later school success is caused by the instability of the very traits we are seeking to measure. Four- and five-year-olds experience developmental bursts and inconsistencies that defy normative charts. In addition, the cognitive domains that can be sampled at younger ages are only moderately related to the cognitive skills demanded later by reading and other academic tasks.

Let us consider two very popular readiness batteries, the Gesell School Readiness Tests and the Metropolitan Readiness Tests. The Gesell purports to measure developmental age and is recommended by its authors for screening children into developmental or two-year kindergarten programs. Numerous reviewers have stated that the Gesell tests do not meet the standards of the American Psychological Association for validity, reliability, or normative information (e.g., Kaufman 1985, Shepard and Smith 1985); yet the tests are used in hundreds of school districts to make placement decisions. Only one study has ever been done reporting a reliability coefficient for the Gesell (Kaufman and Kaufman 1972); in that study the error of measurement was so large that a four-and-one-half developmental age score could not be reliably distinguished from a five-year-old score, but this is precisely the difference that is used to decide who should start kindergarten and who should not. One study was undertaken to evaluate the predictive validity of the Gesell (Wood et al. 1984). Although the test has what sounds like a creditable agreement rate with teacher judgments (78 percent), in fact, when the children identified as “potential kindergarten failures” were examined, only *half* were accurately identified. For every potential failure accurately identified there was a successful child falsely identified. This problem of predictive inaccuracy is not unique to the Gesell but occurs with all of the readiness measures because they have moderately good but not very high predictive validities.

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In an extended review of the technical properties of the Gesell tests, we found that they “lack discriminant validity from IQ tests” (Shepard and Smith 1985). Although the Gesell tests claim to measure developmental age, they essentially measure the same thing that IQ tests measure (Jensen 1969, 1980). Changing the name of what the test measures has profound policy implications. Many decision makers would be willing to hold out of school or place in a two-year track children who are “developmentally young.” It is much less defensible to hold out of school children who are below average in IQ, especially since a disproportionate share of these children will come from low socioeconomic backgrounds.

The Metropolitan Readiness Tests are among the technically best measures available (Ravitch 1985). The Metropolitan is not advertised, however, for the purpose of sorting children into ready and unready groups. Rather it is intended to help teachers organize instruction. For example, a kindergarten teacher might plan different activities for children who are ready to learn letter sounds than for children

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who cannot make auditory discriminations. If the Metropolitan were to be used to place children in special two-year programs, it would fare slightly better than the Gesell, since its predictive correlations are higher, but would still produce many identification errors.

The fact that screening programs will misidentify many children raises the question of whether it is better to catch unready children even if many of those identified will be falsely labeled. The answer depends on the benefit (or harm) of the special placement. A similar lesson was learned in the field of special education. The National Academy Panel on Selection and Placement of Students in Programs for the Mentally Retarded noted that if special education were unambiguously a benefit, there would be no dispute over the validity of identification and placement procedures (Heller et al. 1982). The validity of readiness tests is entwined with the validity or effectiveness of special programs.

It is not possible, then, to make highly accurate assessments of school readiness. Most test publishers are careful about the claims they make for their tests, suggesting that they be used to help teachers plan instruction. If children are classified into ready and unready groups on the basis of a test, a number of identification errors will occur. How school systems should proceed knowing that readiness measures are fallible depends on the benefit of special programs.

Providing an Extra Year for Unready Children

Several options have been proposed whereby schools can provide an extra year for children who are not yet ready for the demands of first grade. In addition to the possibility of keeping children at home, the Gesell Institute has suggested that developmentally young children can attend a developmental or prekindergarten, repeat kindergarten, or attend a pre-first grade class between kindergarten and first grade (*A Gift of Time* 1982). Proponents of these alternatives argue that time itself is the best cure for the problem of differential readiness. Donofrio (1977) urged that these “unfavored” children be allowed to “mark time” until they are in step psychologi-

cally with their “behavioral and maturational peers” (p. 351).

Extra-year programs are effectively like repeating kindergarten even when the curriculum is altered from one year to the next. Certainly, parents who are asked to agree to these placements struggle with the implications of “retention” regardless of whether they accept the arguments for the program (Shepard and Smith 1985). One might look to the extensive research literature on nonpromotion or grade retention to evaluate extra-year programs. The majority of parents and educators believe that grade repetition is an effective solution for academic failure and social immaturity (Byrnes and Yamamoto 1984). Yet research findings are almost uniformly negative. When retained children were compared to equally low achievers who were promoted, the socially promoted pupils were consistently ahead on both achievement and social-emotional measures (Holmes and Matthews 1984, Rose et al. 1983). Contrary to popular beliefs, repeating a grade does *not* help students gain ground academically and has a negative impact on social adjustment and self-esteem. Ironically, reviewers have also found that the practice of holding children back does not increase the homogeneity of classrooms (Bossing and Brien 1979, Haddad 1979).

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Advocates of kindergarten retention are likely to dismiss the negative findings of nonpromotion research because an extra year of kindergarten is intended to prevent failure before it occurs. Many fewer studies are available on pre-first grade or prekindergarten programs. Gredler (1984) located five recent studies evaluating "transition" or pre-first grade classes. In only one of these studies (Raygor 1972) was there a benefit or achievement gain for children in the transition program. In four studies the transition-room children were no better off after an extra year than the "potential first grade failures" who were placed in the regular first grade. Bell (1972) found that transition-room children had lower self-esteem and lower self-confidence than the at-risk children who were not retained. In Raygor's study the initial benefit washed out by third grade.

May and Welch (1984) conducted a study in a school district where children were placed on the basis of the Gesell Screening Test. Children who were identified as developmentally immature were recommended to "buy a year" and spend an extra year before second grade. If their parents refused the recommendation, immature children were classified as "overplaced" and continued in the traditional grade sequence. The state achievement test at the end of third grade showed 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, one of which had had an extra year of school. More importantly, on the Stanford there were also no differences between the at-risk groups and the rest of the school district population. Thus, May and Welch 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.

In our study of two-year kindergarten programs, we compared children with an extra year to equally at-risk children who did not repeat (Shepard and Smith 1985). At the end of first grade the children who had repeated kindergarten were one month ahead on a standardized reading test. There

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were no differences between the two groups on a math achievement test nor on teacher ratings of reading and math achievement, social maturity, learner self-concept, or attention. Parents of the two groups rated their children the same in first grade progress and relationships with peers; children who spent an extra year in kindergarten had slightly worse attitudes toward school.

Despite the promises, providing an extra year before first grade does not solve the problems it was intended to solve. Children in these programs show virtually no academic advantage over equally at-risk children who have not had the extra year. Furthermore, there is often an emotional cost associated with staying back, even when parents and teachers are very enlightened about presenting the decision to the child (Shepard and Smith 1985).

Policy Conclusions

Children come to school with enormously different interests, aptitudes, and background experiences. They cannot be made to adapt to a uniform curriculum. The policy options, which common sense suggests, are consistently rejected by research findings. Changing the entrance age will not correct the problems of the youngest first graders because a new youngest group emerges. Children cannot be selected to stay at home or attend a

two-year kindergarten on the basis of a test, because the tests are not accurate enough; too many children would be falsely diagnosed as "unready." Extra-year programs have not boosted achievement and, contrary to expectation, have hurt rather than helped self-esteem. Therefore, school districts must think again before screening children into unsuccessful programs on the basis of fallible tests.

There are other alternative solutions to the unreadiness problem but they are not so popular as simple answers—a new date, a new test, or a new grade level. As they so often do, workable solutions will depend on teachers rather than policymakers and on programs that respond to children's individual differences in readiness. In one study of extra-year programs, the biggest gains were not for the extra-year children but for the at-risk children who received extra help in the regular classroom (Leinhardt 1980). It is necessary as well to try to keep the youngness problem in perspective. The disadvantage of the youngest first graders is small, after all, only about 7 or 8 percentile points. And unless it is cast in stone by a learning disability label or grade retention, in most cases it will disappear entirely by the third grade. □

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