

Introducing the Issue

Cecilia Rouse, Jeanne Brooks-Gunn, and Sara McLanahan

Although racial and ethnic gaps in educational achievement have narrowed over the past thirty years, test score disparities among American students remain significant. In the 2002 National Assessment of Educational Progress, 16 percent of black and 22 percent of Hispanic twelfth-grade students displayed “solid academic performance” in reading, as against 42 percent of their white classmates.¹ Similar gaps exist in mathematics, science, and writing. In response to such findings, policymakers have devised high-profile education initiatives to help schools address these disparities. The No Child Left Behind Act of 2002, for example, explicitly aims at closing achievement gaps. And such policies are important. As Christopher Jencks and Meredith Phillips, two highly regarded social scientists, conclude, “reducing the black-white test score gap would probably do more to promote [racial equality] than any other strategy that commands broad political support.”²

To date, policymakers and practitioners have focused most attention on the gaps in

achievement among school-aged children. And yet by many estimates sizable racial and ethnic gaps already exist by the time children enter kindergarten. Indeed, according to one report, about half of the test score gap between black and white high school students is evident when children start school.³

Why is so much attention focused on school-aged children? One reason is the lack of data on younger children. Many large and detailed surveys include only older children, and school-based administrative data necessarily exclude preschoolers. A second reason is that federal, state, and local policy focuses on public education, which has traditionally started with kindergarten. Finally, until recently the lives of preschool children were largely viewed as falling under the purview of the family and outside the scope of public policy.

Nevertheless, research findings and common sense both suggest that what happens to children early in life has a profound impact on their later achievement. The behavioral and academic skills that children bring with them

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to school not only determine how schools must spend resources but also potentially affect disparities in outcomes. And some analysts argue that attending to disparities in the early years is likely to be cost effective. As Nobel laureate James Heckman notes, evaluations of social programs targeted at children from disadvantaged families suggest that it is easier to change cognition and behavior in early childhood than in adolescence.⁴

This issue of *The Future of Children* shines the spotlight on school readiness. In its broadest sense, school readiness includes the readiness of elementary school teachers and staff as well as of children and parents. Yet although schools must be ready for the children who arrive at their doors, in this volume we focus on the skills of the children themselves.

Why Gaps in School Readiness Matter

Children who enter school not yet ready to learn, whether because of academic or social and emotional deficits, continue to have difficulties later in life. For example, children who score poorly on tests of cognitive skills during their preschool years are likely to do less well in elementary and high school than their higher-performing preschool peers and are more likely to become teen parents, engage in criminal activities, and suffer from depression. Ultimately, these children attain less education and are more likely to be unemployed in adulthood.⁵

Although most research focuses on academic skills, such as vocabulary size, complexity of spoken language, familiarity with the alphabet and books, basic counting, classification, and what is called “general knowledge,” readiness for school also requires social and emotional skills. Children must be able to follow directions, work with a group, engage in

classroom tasks, and exert some impulse control. In a 1997 report, the National Education Goals Panel emphasized that preparedness went beyond academics.⁶ And a poll of kindergarten teachers found that they rate knowledge of letters and numbers as less important readiness skills than being physically healthy, able to communicate verbally, curious and enthusiastic, and able to take turns and share.⁷

Like the child whose academic skills are weak, the child who cannot sit still (even for a few minutes), who interferes with his neighbors, who has temper tantrums, or who yells or hits (more than the average kindergartner) is likely to have difficulty in school.⁸ Such early problems of self-regulation, as they are sometimes called, are predictive of future problems. For example, preschool children who exhibit highly aggressive and disruptive behaviors are at risk for juvenile delinquency and school drop-out during adolescence.⁹ Not surprisingly, children with poor self-regulation not only spend less time “on task” in classrooms, which may lead to academic difficulties, but also elicit more negative reactions from their peers and teachers, further reducing social skills and encouraging disengagement from school.

At the Schoolhouse Door: Ready or Not

How many children arrive at school each year not ready to learn? In a national survey of more than 3,500 kindergarten teachers in the late 1990s, 46 percent of teachers indicated that at least half of the children in their classrooms were having problems following directions, some because of poor academic skills and others because of difficulties working in a group.¹⁰ Problems were more common among black and Hispanic children than among whites. Similarly, teachers in schools

with a high proportion of minority children reported substantially more problems than teachers in schools with a low proportion of minorities. In short, kindergarten teachers perceived their black and Hispanic children as lagging behind white children in both the academic and the self-regulatory aspects of school readiness.

We emphasize at the onset that by focusing on school readiness we do not mean to “let schools off the hook.” Much work remains to be done to understand and improve education for all children. Rather, by focusing on essential aspects of children’s lives before they enter school, we seek to understand how we might ultimately close the racial and ethnic gaps in educational outcomes. Only by having a comprehensive view of all the factors that underlie academic achievement can policymakers and practitioners begin to close those gaps.

In addition, we have chosen to focus on racial and ethnic *differences* in school readiness as opposed to *levels* of readiness. Although we agree that the ultimate goal of public policy should be to improve the readiness of all children, we believe that in a divided society such as the United States, attempting to raise the bar for the most needy students is a worthy goal, consistent with basic American values. We also felt that by focusing on the racial and ethnic gaps in readiness, we would simultaneously highlight policies that were likely to raise the bar for all students.

What the Issue Does

The articles in this issue address several questions. How large are the racial and ethnic gaps in school readiness? How much of the gap is due to differences in children’s socioeconomic background or to genetics? How much do disadvantages like poor health,

poor parenting, low-quality preschool child care, and low birth weight contribute to the gaps? What lessons can we learn from new research on brain development? What do we know about what works and what does not work in closing the gaps?

Contributors to this issue were chosen carefully, and each is an expert in his or her field. In our original charge, we encouraged the authors not to discuss every paper written on

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a particular topic but rather to identify the most important findings and give the reader their “best assessment” of the bottom line. We also asked them to indicate when important information was missing or ambiguous. Thus the issue seeks to clarify what we do and don’t know about disparities in school readiness.

We also note that many articles in this issue focus on the black-white test score gap rather than on gaps for other races and ethnicities. The lack of emphasis on Hispanics (and to an even larger degree other races and ethnicities) is largely due to limits in the available data. Newer data sets include more students from a wider range of backgrounds, and we expect to learn much more about other racial and ethnic gaps in the future.

Finally, the articles focus more on the academic than on the social and emotional skills that make up school readiness. As yet, researchers simply know less about racial and ethnic gaps in social and emotional skills and about the conditions (parenting, child care, child and maternal health) that account for these gaps. Whenever such information is available, the authors include it. In the years ahead we expect researchers to place more emphasis on the social and emotional aspects of school readiness.

What We Have Learned

The articles that follow provide the latest information and findings on a wide range of questions, and full summaries are provided at the beginning of each. In this section, we highlight what we see as the most important findings.

Testing for School Readiness

A variety of standardized tests show substantial racial and ethnic disparities at the time children enter school. Estimates of the gap in school readiness range from slightly less than half a standard deviation to slightly more than 1 standard deviation. According to Don Rock and Jack Stenner, estimates of the racial and ethnic gaps in school readiness among preschool children depend on the type of test used to measure readiness. Vocabulary tests typically show gaps of 1 standard deviation or more. Reading and math achievement tests show gaps ranging from four-tenths to six-tenths of a standard deviation. A key question that has yet to be answered by researchers and policymakers is what accounts for the difference in the estimates. The fact that the smallest gap comes from a recent survey conducted by the U.S. Department of Education—the Early Childhood Longitudinal Survey of Kindergarten children (ECLS-K)—makes the question even more crucial. Is the

ECLS-K estimate a more accurate measure (meaning that the gap is overstated in other tests)? Is it smaller because it comes from more recent data (meaning that the gap has narrowed over time)? Or is it smaller because it measures a different aspect of readiness from the other tests? The strongest evidence, although still inconclusive, suggests the difference lies in how the tests measure school readiness.

Socioeconomic Background: Important but Elusive

Greg Duncan and Katherine Magnuson document that 10 percent of white children, as against 37 percent of Hispanic and 42 percent of black children, live in poverty. Further, the better the socioeconomic status of a child's family, the more likely that child is to be "ready" for school. Given the close links between race and ethnicity and family socioeconomic status, on the one hand, and socioeconomic status and school readiness, on the other, it is not surprising that family socioeconomic status appears to explain a substantial portion of the racial and ethnic gaps in readiness.

In some respects, estimates of the role of family socioeconomic status complicate efforts to understand the racial and ethnic gaps. One problem is that family socioeconomic status is a proxy for many of the underlying factors that affect school readiness. For example, parents in families with low socioeconomic status are less likely to talk to, read with, and teach young children than are parents in families with high socioeconomic status. And both socioeconomic conditions and parenting behavior are associated with school readiness.

Another problem is that researchers have not been able to pinpoint what socioeconomic

conditions provide for families vis-à-vis children. If poor parents were to get more money, would they purchase better child care, more learning materials for the home, or increased access to health care? Does increased income alter parenting, and if so, why? Do parents with more money lead less stressful lives, resulting in less depression and anxiety and perhaps less harsh parenting? Or do parents with more money have more time to spend with their children? Similarly, what does parents' higher education provide for families?

Even more problematic, if, as is often the case, researchers use an aggregate measure of socioeconomic conditions (one that includes income, parental occupation, and parental education), it is not possible to know which aspect or aspects of socioeconomic conditions are contributing to the improvement in children's preparation for school. Because researchers do not as yet have definitive answers to these questions, knowing that family socioeconomic status matters is not the same as knowing why it matters and hence how this knowledge can be used to close the gap.

Other Contributors to the Readiness Gap

Other articles in this issue focus on the individual factors that contribute to cognitive development and school readiness and for which socioeconomic status is likely a proxy: environmental stress, health, parenting, early child care experiences, the impact of being born low birth weight, and genetic endowment.

ENVIRONMENTAL STRESS. Although still in its infancy, new research on brain development can potentially shed much light on how to close the gap in school readiness. Kimberly Noble, Nim Tottenham, and B. J. Casey explain that chronic stress or abuse in child-

hood can impair development of the hippocampus, the region of the brain involved in learning and memory, and reduce a child's cognitive ability. Thus the impact of stress on brain development during childhood may explain a large portion of the gap in school readiness. Another finding of neuroscience research—that children's brains remain plastic and capable of growth and development much longer than previously believed—suggests that targeted educational interventions have the promise of improving both brain function and behavior even among children in the most distressing life circumstances.

HEALTH. Improving the health of mothers and infants may also help to close racial and ethnic gaps in school readiness. Janet Currie's back-of-the-envelope calculations suggest that racial differences in health may account for about 13 percent of the racial gap in school readiness, maternal breastfeeding another 6 percent, and maternal depression yet another 6 percent. She estimates, then, that child health combined with maternal health and behavior may account for as much as one-fourth of the racial gap in school readiness.

Nancy Reichman reports that racial and ethnic disparities in low birth weight only explain up to 4 percent of the aggregate gap in school readiness. Although there are substantial black-white differences in rates of low birth weight, and although disabilities arising from very low birth weight can seriously impair cognitive development, Reichman notes that the overall effect on the racial and ethnic gaps is relatively small, because low birth weight affects only a small share of children.

PARENTING. Jeanne Brooks-Gunn and Lisa Markman document substantial racial and ethnic variation in certain parenting behaviors, such as nurturance, discipline, teaching,

and language use, that are linked to children's cognitive, social, and emotional skills. Most striking are differences in language use. Black and Hispanic mothers talk less with their young children than do white mothers and are less likely to read to them daily. Black and Hispanic families also have fewer reading materials in their homes. The authors conclude that parenting differences can explain as much as one-half of the racial and ethnic differences in school readiness.

EARLY CHILDHOOD EDUCATION PROGRAMS. Katherine Magnuson and Jane Waldfogel note that children who attend center-based child care or preschool programs enter school more ready to learn. And they find racial and ethnic differences both in the share of children enrolled in preschool programs and in the quality of care they receive. Black children are more likely than white children to be enrolled in preschool, particularly in Head Start, the publicly funded program for children from impoverished families. Hispanic children are much less likely than white children to attend preschool; those who do attend are more likely to attend Head Start. Black children are more likely to attend lower-quality preschool programs than their white peers. According to the authors, equalizing access to center-based care could close up to 26 percent of the gap between Hispanic and white children. Improving the quality of Head Start programs could close between 4 and 10 percent of the black-white gap and between 4 and 8 percent of the Hispanic-white gap. It is not clear, however, how much the racial and ethnic gaps in school readiness would be reduced if all center-based programs, not just Head Start, were to become high quality.

GENETICS. Although cognitive ability is both highly heritable and important for school

achievement, William Dickens concludes that genetic endowment does not contribute significantly to black-white gaps in school readiness. He notes, though, that studies of the role of genes and environment in determining school readiness offer some useful lessons in designing interventions to narrow the gaps. For example, he cites the positive effects of preschool interventions designed to increase cognitive ability and suggests ways to counter their often-noted “fadeout effects”—that is, the decline in cognitive gains once the program ends. Such interventions, he says, can induce long-lasting changes by setting off multiplier processes, whereby improved ability leads to more stimulating environments and still further improvements in ability. The best interventions, he argues, would saturate a social group (say, all members of a community or school) and reinforce initial positive effects with new interventions in the elementary school years and perhaps beyond.

Accounting for the Gaps in Readiness:

A Caution

As noted, several authors provide estimates of how much different factors contribute to the overall readiness gap. We caution that tempting as it is to try to do so, one cannot simply add up these estimates to determine how much of the overall gap they explain. The difficulty is that these factors are highly correlated with one another, and thus when viewed individually, any one factor is likely to be picking up the effect of others. For example, one set of authors argues that approximately 40–50 percent of the racial and ethnic gap in school readiness may be attributed to parenting behaviors, while another author attributes one-fourth of the gap to differences in child and maternal health and behaviors. Yet it would be a mistake to conclude that taken together parenting and child and ma-

ternal health and behaviors explain 65–75 percent of the gap. Why? Because part of the reason why maternal health and behavior matter is that physically and mentally healthy mothers may be better parents. In any case, the effect of child health and maternal health and behaviors on cognitive development is already (at least partly) accounted for by parenting. Adding the two estimates together would overstate what we know about the gap. The same could be said for socioeconomic status and child care.

That said, Roland Fryer and Steven Levitt have examined what explains racial and ethnic gaps in school readiness using the most recent data from the U.S. Department of Education. They found that family socioeconomic status, number of books in the home, low birth weight, and other factors account for 70–80 percent of the gaps in reading and math.¹¹ In essence, the message of this issue is similar: taken together, family socioeconomic status, parenting, child health, maternal health and behaviors, and preschool attendance likely account for most of the racial and ethnic gaps in school readiness.

Closing the Gaps: What Works and What Doesn't

What does this issue tell us about how to close the racial and ethnic gaps in school readiness? We've learned that some strategies that might seem obvious turn out to be less promising than expected. Although child health, for example, is an important determinant of school readiness and of the racial and ethnic gaps in school readiness, increasing poor children's access to Medicaid and state child health insurance is unlikely to narrow these gaps because poor and near-poor children are already eligible for public insurance. The problem is that not all eligible children are enrolled. And increasing enrollment may not be the answer

either: socioeconomic disparities persist in Canada and the United Kingdom despite universal public health insurance.

Similarly, given the importance of socioeconomic factors, it might appear that the best way to close the gaps in school readiness would be to reduce racial and ethnic disparities in parents' economic resources. Programs such as the earned income tax credit (which supplements the earnings of low-income parents), the minimum wage, and the child tax credit increase low-income families' economic well-being. Making the child tax credit refundable for those who do not earn enough to pay taxes would do even more to raise the family incomes of poor and minority children. To date, however, there is no strong evidence that increasing parental income positively affects the school readiness of children.

Helping parents further their education might also appear to be an effective strategy. Increasing the schooling of all black and Hispanic mothers by one or two years, for example, would significantly narrow the school readiness gap of their children. But to date few interventions have been able to produce such gains in maternal schooling. Although more intensive programs might enjoy more success, they may not be cost effective. In sum, although programs that increase the socioeconomic status of families are likely to reduce economic disparities and make a modest impact on racial gaps, we believe that approaches that directly address the child and parental behaviors that contribute to school readiness will prove more effective.

One such strategy that holds long-term promise comes from the nascent field of neuroscience. Researchers are making great strides in understanding how the brain develops and what aspects of experience help or

hinder the process. Educational interventions are already able both to raise children's scores in tests of reading and to increase activity in the brain regions most closely linked with reading. The areas of the brain that are most critical for school readiness may thus prove quite responsive to effective therapeutic interventions—even making it possible to tailor particular interventions for individual

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children. Although this field is in its infancy, such tailoring may one day make educational interventions quite effective in closing racial and socioeconomic gaps in readiness and achievement.

For the present, however, we believe that by far the most promising strategy is to increase access to high-quality center-based early childhood education programs for all low-income three- and four-year-olds. Such a step would measurably boost the achievement of black and Hispanic children and go far toward narrowing the school readiness gap.

So what should these programs look like? First and foremost, the education component of these programs must be of high quality. This means having small classes with a high teacher-pupil ratio, teachers with bachelor degrees and training in early childhood edu-

cation, and curriculum that is cognitively stimulating. Few of the child care centers and Head Start programs that now serve low-income children meet all of these standards.

Second, the new programs should train teachers to identify children with moderate to severe behavioral problems and to work with these children to improve their emotional and social skills. Although such training is now being provided by some Head Start programs and some preschool programs, it is not available in most center-based child care programs.

Third, the new programs should include a parent-training component that reinforces what teachers are doing in school to enhance children's cognitive and emotional development. Examples of such training would include encouraging parents to read to their children on a daily basis and teaching parents how to deal with behavioral problems. Improving parental skills would have important multiplier effects on what teachers were doing in the classroom.

Fourth, the new programs should provide staff to identify health problems in children and to help parents get ongoing health care for their children. Including an annual home visit as part of this service would allow staff to further screen for serious mental health problems among parents. Although some Head Start programs and child care centers in low-income communities do link parents with health care services for their children, these programs do not include a home visit, nor do they address the health needs of parents.

Finally, the new programs should be well integrated with the kindergarten programs that their children will eventually attend so

that the transition from preschool to kindergarten is successful for children, parents, and teachers. Again, to have their greatest impact, high-quality programs must aim at saturating the classroom and the community and changing multiple aspects of the child's environment.

We know that high-quality early childhood programs exist. And the best research confirms that they make great headway in closing

racial and ethnic gaps in school readiness. The problem is that these programs reach only a small proportion of low-income children. Decades ago, this country made a commitment to do the unthinkable—to put a man on the moon. Today our aim is both more and less lofty. We know how to help a child begin school ready to learn. We know how to begin to close racial and ethnic gaps in school readiness. We simply must decide to do so.