

Can Family Socioeconomic Resources Account for Racial and Ethnic Test Score Gaps?

Greg J. Duncan and Katherine A. Magnuson

Summary

This article considers whether the disparate socioeconomic circumstances of families in which white, black, and Hispanic children grow up account for the racial and ethnic gaps in school readiness among American preschoolers. It first reviews why family socioeconomic resources might matter for children's school readiness. The authors concentrate on four key components of parent socioeconomic status that are particularly relevant for children's well-being—income, education, family structure, and neighborhood conditions. They survey a range of relevant policies and programs that might help to close socioeconomic gaps, for example, by increasing family incomes or maternal educational attainment, strengthening families, and improving poor neighborhoods.

Their survey of links between socioeconomic resources and test score gaps indicates that resource differences account for about half of the standard deviation—about 8 points on a test with a standard deviation of 15—of the differences. Yet, the policy implications of this are far from clear. They note that although policies are designed to improve aspects of “socioeconomic status” (for example, income, education, family structure), no policy improves “socioeconomic status” directly. Second, they caution that good policy is based on an understanding of causal relationships between family background and children outcomes, as well as cost-effectiveness.

They conclude that boosting the family incomes of preschool children may be a promising intervention to reduce racial and ethnic school readiness gaps. However, given the lack of successful large-scale interventions, the authors suggest giving only a modest role to programs that address parents' socioeconomic resources. They suggest that policies that directly target children may be the most efficient way to narrow school readiness gaps.

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National tests regularly show sizable gaps in school readiness between young white children and young black and Hispanic children in the United States. In the nation's most comprehensive assessment of school readiness among kindergartners, the 1998 Early Childhood Longitudinal Study (ECLS-K), both black and Hispanic children scored about two-thirds of a standard deviation below whites in math (the equivalent of roughly 10 points on a test with a mean of 100 and a standard deviation of 15) and just under half a standard deviation (7–8 points) below whites in reading (see figure 1).¹

What might be causing such gaps? One prominent possibility is that the historical racial and ethnic inequalities in the United States have created disparate socioeconomic circumstances for the families in which white, black, and Hispanic children are reared. As graphed in figure 1, the racial gaps in family socioeconomic status (SES) of the children in the ECLS-K closely matched the gaps in test scores.² The average socioeconomic level of black kindergartners was more than two-thirds of a standard deviation below that of whites. Hispanic children had even lower socioeconomic standing relative to whites.

With such similar racial and ethnic gaps in test scores and SES, it is tempting to conclude that equalizing the social and economic circumstances of white, black, and Hispanic preschoolers would eliminate most if not all of the achievement gap. Whether this is likely is the subject of this article. We begin by considering theories about why family socioeconomic resources might matter for children's school readiness and reviewing studies of interventions designed to boost those resources

in various ways. We then summarize results from studies that attempt to account for the racial and ethnic achievement gaps by examining differences in family socioeconomic status.

Material Hardship and Family Socioeconomic Status

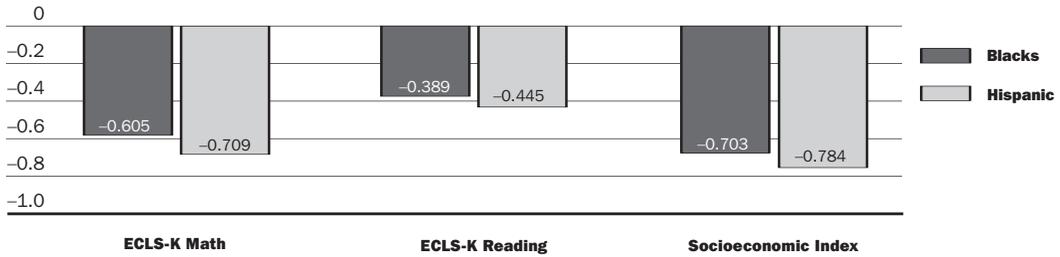
Life is very different for a family with a single parent struggling to make ends meet by working at two minimum-wage jobs and a family with one highly paid wage earner and a second parent at home caring for their children. One family faces a vast range of material and psychological hardships, while the other is largely spared such stressors.³ The first family, for example, may have a lower-quality home environment that exposes children to pollutants and toxins, such as lead, and provides fewer learning opportunities in the home or lower-quality child care outside it. Greater stress may increase the mother's irritability and reduce her warmth and responsiveness to her children. Across racial and ethnic groups in the United States, such differences in family resources, particularly financial resources, are systematic and often large, prompting researchers to investigate whether family resource differences may account for the racial and ethnic differences in school readiness.

Material Hardship and Household Resources

The ECLS-K data in figure 2 reveal striking differences both in a broad range of indicators of family hardships and in the accumulation of those disadvantages between poor and nonpoor children. (Some of the indicators do not, strictly speaking, point to socioeconomic status but relate to conditions, such as low birth weight and depressive symptoms, and behaviors, like harsh parenting, that are discussed in other articles in this volume.) The

Figure 1. Racial and Ethnic Gaps in Selected Test Scores and in Family Socioeconomic Status for Kindergartners

Standard deviation difference from whites



Source: Authors' calculations based on data taken from the ECLS-K.

first four items in figure 2 (mother a high school dropout, single-parent family, mother with no job or a job with low prestige, and unsafe neighborhood) are relatively common indicators of inadequate family economic and social resources. The next seven items are resource-related disadvantages often faced by poor families with children: large family size (three or more siblings), residential instability (child moved four or more times before starting school), harsh discipline (child spanked two or more times in the past week), few learning materials (fewer than ten children's books in the house), low birth weight (infant less than 5.5 pounds at birth), young parents (child born to a teen mother), and high levels of maternal depressive symptoms.

The contrasts between poor and other children could hardly be more stark. In almost every case, more than twice as many poor as nonpoor children suffer the given hardship, and for several hardships (high school dropout mother, bad job, and few children's books) the rate is more than three times as high.

The distribution of hardships differs not only by poverty status, but also by race and ethnicity (see table 1). With the exception of residential instability, black and Hispanic chil-

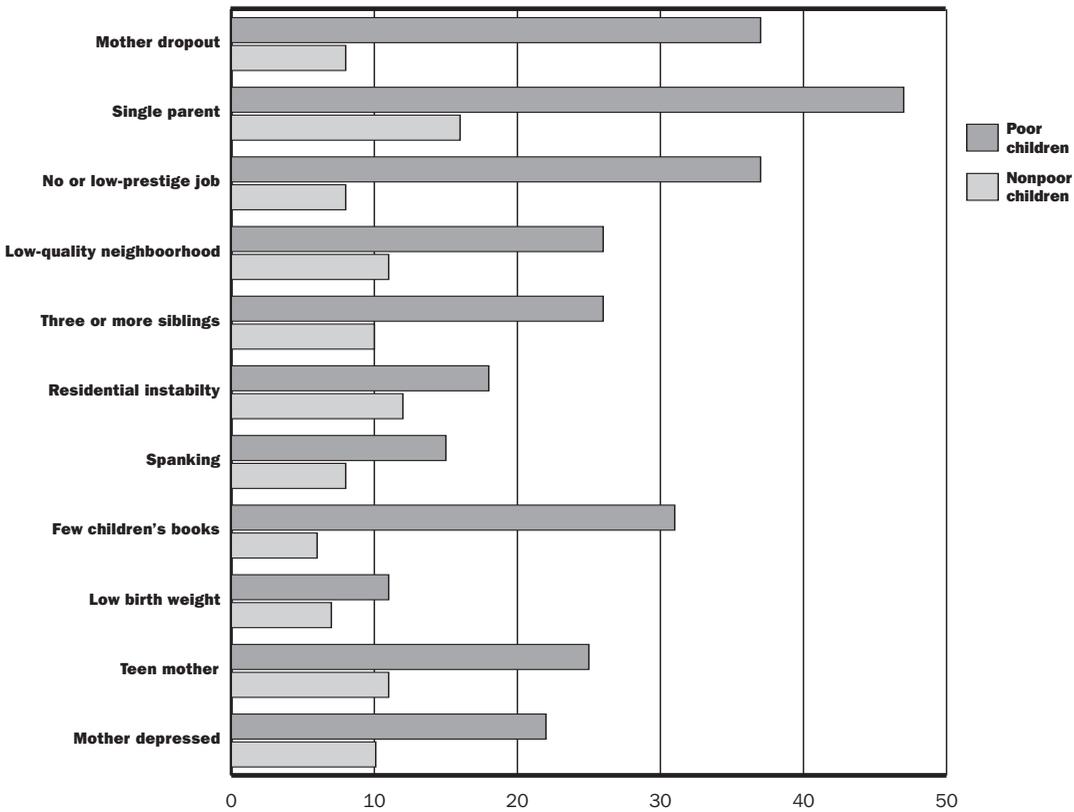
dren are much more likely to experience hardships than are white children. The prevalence of single-parent families, low birth weight, harsh parenting, and maternal depressive symptoms is highest among black children. Hispanic children are most likely to have mothers who did not complete high school and to have few children's books in their homes.

Racial and ethnic differences are also apparent in the total number of hardships that children face. The vast majority of black and Hispanic children suffer at least one hardship, compared with just over half of white children. Experiencing four or more hardships is very rare for white children, but much more common among Hispanic, and especially black, children.

Socioeconomic Status or Socioeconomic Resources?

Some social scientists gather a variety of indicators of financial and social resources under the umbrella term of "socioeconomic status" (SES). For them, socioeconomic status refers to one's social position as well as the privileges and prestige that derive from access to economic and social resources. Because it may be difficult to measure directly a family's access to resources or its position in a social hierar-

Figure 2. Percent of Poor and Nonpoor Children Experiencing Hardships



Source: Same as figure 1.

chy, analysts often use one indicator (typically occupation) or combine several indicators (for example, parental education and occupation) into scales that indicate families' relative positions in a social hierarchy.⁴ The differences in socioeconomic status shown in figure 1 exemplify this single-indicator approach. Using a summary index to measure SES emphasizes social stratification as an organizing force in individuals' lives and presumes that one's social standing is a more important determinant of life chances than any of the economic and social resources that determine it.⁵

A different approach to measuring SES is based on the premise that distinct types of socioeconomic resources contribute to social inequality and stratification along differing

economic and social dimensions.⁶ For example, although parents' educational attainments, incomes, and occupations are related, each may affect children in different ways.⁷ Rather than using a summary measure, proponents of this approach consider each component separately, as seen in figure 2. This method requires a complicated sorting out of the separate effects of correlated social and economic disadvantages, which if done incorrectly may understate the importance of either the constellation or the accumulation of household resources. We take this multidimensional approach throughout this article by concentrating on four key dimensions of parental socioeconomic resources—income, education, family structure, and neighborhood conditions.⁸

Table 1. Percent of Children Experiencing Poverty and Hardships, by Race and Ethnicity

Characteristic	White	Black	Hispanic
Experiencing poverty	10	42	37
Experiencing Hardships			
Mother high school dropout	7	18	35
Single parent	15	50	24
No or low-prestige job	8	18	21
Low-quality neighborhood	5	23	21
Three or more siblings	11	21	18
Residential instability	13	12	13
Spanking	7	17	10
Few children's books	2	20	29
Low birth weight	6	15	8
Teen mother	10	22	19
Mother depressed	11	20	13
One or more hardships	52	87	81
Four or more hardships	4	29	18

Source: Based on data from the ECLS-K study.

Are Socioeconomic Resources Really the Issue?

Before taking a more detailed look at these resources, we raise a fundamental question: does SES really determine achievement? Causation is notoriously difficult to prove in the social sciences, and just because middle-class children's academic achievement exceeds that of poor children, one should not necessarily infer that eliminating the income gap would eliminate the achievement gap.

Maybe what really matters for children's achievement is the psychological dispositions of their parents, including, for example, depression. As noted, depression is more prevalent among low- than higher-income parents, as discussed by Janet Currie in her article in this volume. Perhaps income and child achievement are linked because both are higher in the case of better-adjusted parents. Or maybe the asso-

ciation between socioeconomic status and achievement stems from the poorer health and greater developmental problems of the children, which can both lower a child's academic achievement and reduce a family's resources by limiting parents' employment. Moreover, as pointed out by William Dickens in his article in this volume, many behavioral geneticists, concluding that socioeconomic conditions are relatively unimportant, put forth a different logic. They argue that genetic endowments of ability are key determinants of test scores, and children reared in more affluent families score higher on achievement tests in part because of genetic endowments passed on from one generation to the next.

If parental mental health, child health, or genetic endowments are what really matter for children's achievement, then increasing parents' income or education without also addressing these other causes would not boost achievement. Our discussion of the relationships between achievement and the four most important components of SES—income, education, family structure, and neighborhood—is mindful of the difficulties of establishing causal effects.

The best evidence on the effects of socioeconomic resources on children's development comes from experimental studies in which participants are randomly assigned to a treatment or a control group. But such studies are rare in the social sciences. Second-best strategies involve following large samples of children for many years and using a host of statistical strategies to rule out alternative explanations for the presumed effects.

Household Income

It is easy to see how higher family incomes might give children a big edge in academic achievement. Financial resources can enable

parents to secure access to good prenatal health care and nutrition; rich learning environments, both in the home and through child care settings and other opportunities outside the home; a safe and stimulating neighborhood; and, for older children, good schools and a college education.⁹

But despite abundant evidence of correlations between income and achievement, the issue of whether family income is causally linked to children's achievement and behavior remains controversial. A study by Judith Smith and colleagues compared the achievement of children in families whose average income fell below the poverty line between their birth and age five with that of children in families whose average income remained above the poverty line during this period of their childhood.¹⁰ They used statistical techniques to ensure that any differences in achievement between poor and nonpoor children were not due to differences in their mothers' education, children's low birth weight, or family structure. Poverty, they found, accounted for about 0.30 standard deviation of the gap in achievement between poor and nonpoor children (the equivalent of about 4–5 points on a test with a mean of 100 and a standard deviation of 15)—enough to explain a substantial share of the racial gap in achievement. The achievement gap between middle-income and higher-income families was not nearly as large, suggesting that boosting household income during early childhood would help poor children more than children from wealthier families. Children whose families faced deep and persistent poverty fared the worst and registered the largest achievement gap, which again suggests that these children would gain the most from added income.¹¹

Smith's study, as well as several others, concludes that the key advantage bestowed by

higher income is a stimulating learning environment. The number of books and newspapers in the home and the access of children to learning experiences routinely explain about a third of the poverty "effect," as discussed in the article by Jeanne Brooks-Gunn and Lisa Markman in this issue.¹²

Although suggestive of a causal link between poverty and achievement, this evidence should not be taken as the final word. A subsequent study, based on the same data used by Smith and her coauthors but ruling out a longer list of alternative explanations for the achievement gap, estimated a considerably smaller difference between low- and high-income children.¹³

A series of experimental welfare reform evaluation studies during the 1990s made it possible to observe how increases in family income affect children's development. Although all the experimental programs increased parental employment, only certain programs increased family income. Only when income was increased did preschool and elementary school children's academic achievement improve.¹⁴ For young children, family income gains of roughly \$1,000 a year translated into achievement gains of about 0.07 standard deviation, about 1 point on our reference test. Sustained over time, even such small gains may be economically profitable, leading to sizable increases in lifetime earnings.¹⁵

Income, it appears, does matter for children's achievement, although perhaps not as much as some early studies suggested. Estimated at more than \$30,000, the gaps in family income between white children and black and Hispanic children are huge. What policies might begin to close these gaps?

One strategy, embodied in several of the welfare reform programs described above, is to

promote low-income parents' participation in the labor market and reduce their reliance on welfare. But even the most generous welfare reform programs boosted average family incomes by only \$1,000 or \$2,000 a year. Other work-oriented interventions, such as low-cost job search programs, have produced relatively small absolute income gains for women—a few hundred dollars over the course of a year or two.¹⁶ More intensive, training-based programs have netted women proportionately bigger earnings gains—a few thousand dollars over several years—but none created the kind of long-term income increases that would begin to narrow the income gap between white families and ethnic and racial minority families. Employment interventions for disadvantaged adult men have had even less encouraging results. Only about a third of such interventions increased either employment or earnings, and none emerged as a panacea.

Another approach is to supplement the incomes of poor working families through the earned income tax credit.¹⁷ A refundable federal tax credit for low-income working families with children, the EITC was expanded during the 1990s and is now the nation's largest cash transfer program for low-income families. In 2003 the maximum benefit for a family with two children was about \$4,200, and nearly 19 million families received the credit.¹⁸ In 1997 the program lifted about 2.2 million children out of poverty.¹⁹ By providing income support for low-wage work, the tax credit also encourages work in single-parent families. Increases to the EITC in the 1990s raised the annual employment of poorly educated single mothers by almost 9 percent.²⁰

Parental Human Capital

Human capital includes parental skills, acquired both formally and informally, that are

valuable in the labor market and at home.²¹ Formal schooling is the most familiar and most studied form of human capital, and research confirms that more schooling leads to better employment and earnings.²² More schooling may thus indirectly benefit children by increasing family income, but other parental skills may also directly enhance child well-being, for example, by improving parenting and the ability to accomplish parenting goals.²³

Parents' completed schooling varies widely by race and ethnicity and is particularly low among Hispanics, reflecting their immigration history. Among the ECLS-K sample of kindergartners, 35 percent of Hispanic mothers had not completed high school, compared with only 7 percent of white mothers and 18 percent of black mothers (table 1). At the other end of the scale, 28 percent of white mothers had completed a four-year college program, whereas only 9 percent of black and 8 percent of Hispanic mothers had done so.²⁴

Children with highly educated parents routinely score higher on cognitive and academic achievement tests than do children of parents with less education. Remarkably, the link between children's cognitive development and parental education is evident as early in a child's life as three months of age.²⁵ Yet research has not clearly isolated parental education as the cause of high child achievement.²⁶ Few studies are able to disentangle parents' schooling from other sources of advantage, such as cognitive endowments, that may have increased achievement among both parents and children. The few U.S. studies that have tried to isolate the effects of parental education per se typically find positive but modest effects of maternal and paternal education on children's achievement, with an additional year of schooling linked to

an increase in children's test scores of about 0.15 standard deviation, or about 2 points on our reference test.²⁷

It may be that increasing schooling for mothers who are high school dropouts raises their children's achievement more than increasing education for college-trained mothers.²⁸ According to a recent study, welfare recipients'

Income, it appears, does matter for children's achievement, although perhaps not as much as some early studies suggested.

participation in mandated education or training improved their young children's school readiness by as much as a quarter of a standard deviation, or almost 4 points on our reference test.²⁹

With large gaps in parental education among racial and ethnic groups, interventions that increase rates of high school completion may have a large payoff for future generations. But few academic programs developed to increase high school graduation rates among at-risk adolescents have been effective so far. A recent review of sixteen random-assignment evaluations of dropout-prevention programs found only one to be successful.³⁰ Rigorous evaluations of a few intensive teen mentoring programs have found more promising results, but nevertheless success is not guaranteed, particularly when these programs are implemented on a large scale.³¹

Studies of low-income populations routinely report that without any programmatic inter-

vention, close to 50 percent of disadvantaged mothers return to school.³² Yet even with high rates of continued schooling, educational attainment among economically disadvantaged parents remains much lower than among advantaged families. Thus another intervention approach is to promote educational activities among parents. For example, programs targeting teen mothers may provide support and incentives to stay in school after the birth of a child, or welfare programs may make cash benefits contingent on mothers' participation in education and training. But evaluations suggest that to date these types of interventions have not been successful in boosting mothers' educational activity above the relatively high level of participation of control group mothers.³³

The high enrollment in further education of disadvantaged mothers suggests that mothers might be benefiting from current efforts to offset the costs of education, particularly higher education, and to increase access to educational opportunities. Indeed, expansions in public spending on higher education, including more generous financial aid and an increase in community college funding, have consistently been linked to higher levels of college attainment and enrollment. However, the extent to which educational expenditures have specifically benefited low-income students appears to vary, depending on the specifics of the spending.³⁴ Still another approach is to raise the age at which students may leave school or begin to work. Such policy changes over the past century have modestly increased youths' years of schooling.³⁵

Family Structure

Today about one-third of all children are born outside marriage, and more than half of all children will live in a single-parent family

at some point in their childhood. This causes concern because resources can be scarce in single-parent families.³⁶ Young children living with single mothers face poverty at five times the rate of preschoolers in intact families (50 percent versus 10 percent), and the declines in income for households with children after a divorce are dramatic and lasting.³⁷ Financial and time constraints may limit a single parent's ability to supervise and discipline children and to provide a supportive and stimulating home environment.³⁸ Furthermore, because fathers are often absent from single-parent families, children in these households tend to have fewer male role models, which may not bode well for their social development.³⁹

As with education and income, family structure differences across racial groups are large. Rates of single-parenthood in the ECLS-K sample averaged 15 percent for white children, 24 percent for Hispanic children, and 50 percent for black children (table 1).⁴⁰ Black children are more likely to be born outside marriage; white children, to experience divorce.

On average, children raised by single parents have lower social and academic well-being than the children of intact marriages.⁴¹ Most research on single-parent families has lumped all varieties of such families together or focused only on the effects of divorce.⁴² The few studies that have tried to draw distinctions find little difference between children of divorced and never-married parents; both groups are at greater risk of poor achievement and behavioral problems than children from intact families.⁴³

Rates of teenage childbearing have been steadily falling, dropping 22 percent between 1991 and 2000, from 62.1 births to 48.1

births per 1,000 fifteen- to nineteen-year-olds.⁴⁴ Nevertheless, U.S. rates of teen parenthood continue to exceed those of European countries. And U.S. teen birth rates differ substantially by race. As table 1 shows, about one in five black or Hispanic children was born to a mother younger than twenty, nearly twice the rate for white children. Typically, children of teen mothers face a constellation of socioeconomic hardships, including single parenthood, poverty, and lower maternal educational attainment.⁴⁵

Although most children from broken families fare worse than those in intact families, and children born to teen mothers fare worse than those born to older mothers, in both cases it appears that differences in parental characteristics, such as educational attainment, rather than family structure or maternal age per se, account for a portion of the gaps. Once these differences in family background are taken into account, growing up with a single or remarried parent has persistent, but much more modest negative effects on children's achievement.⁴⁶ For example, a recent adoption study suggests that differences in the parental backgrounds of single- and two-parent families account for a substantial proportion of children's achievement problems after a divorce.⁴⁷ Similarly, the extent to which children would benefit from their mothers' postponing childbearing for a few years is uncertain, although likely modest.⁴⁸

Economic insecurity explains part of the poor outcomes of children reared in single-parent or blended families and by young parents. And parental conflict and strain in divorcing families may impair children's development, particularly with respect to their behavior.⁴⁹ Finally, children in young and single-parent families may face many transitions in family

life, including subsequent cohabitations, remarriages, separations, and divorces. Such instability may pose additional risks to child well-being.⁵⁰

We know little about whether interventions can promote marriage and prevent divorce among disadvantaged populations.⁵¹ Yet even if the current round of federal marriage-promotion programs succeeds, it is unlikely to make much of a dent in the huge differences of family structure between blacks and whites. Furthermore, it appears that for marriage to promote children's achievement substantially, it must go hand in hand with increases in family resources, such as income. Whether higher rates of marriage will improve other aspects of socioeconomic circumstances is unclear.⁵² Evaluations of new marriage programs should shed light on the feasibility of increasing marriage rates, as well as on how doing so will promote children's well-being.

Programmatic interventions to prevent teen childbearing by reducing sexual activity and promoting contraceptive use among adolescents have not been very successful. More often than not, programs designed to postpone sexual behavior fail to delay its onset or reduce its frequency.⁵³ Of twenty-eight carefully evaluated programs focused on abstinence, sexual education, and HIV prevention, only ten delayed the age of sexual initiation. Of the nineteen that measured the frequency of youths' sexual activity, thirteen had no significant effect. Nor did the programs substantially increase contraceptive use. Only four of the eleven program evaluations that measured teenagers' use of contraception found positive effects. A handful of more intensive interventions that provided mentoring and constructive after-school activities had more positive results.⁵⁴ But

whether these intensive programs can be replicated on a larger scale is uncertain. As with dropout-prevention programs, concentrated intervention is a necessary but not sufficient condition for success.⁵⁵

Neighborhoods

Neighborhoods shape children's development in many ways, although kindergartners are probably less susceptible to neighborhood influences than are adolescents.⁵⁶ The risks posed by low-quality neighborhoods are most striking in high-poverty urban communities plagued by violence, gangs, drug activity, old housing stock, and vacant buildings, where watchful parents may not allow children to walk to school alone or play outside.⁵⁷ Such neighborhoods may influence children through increased stress, perhaps stemming from community violence; social disorganization, including a lack of positive role models and shared values, which may lead to problem behavior; a lack of institutional resources, such as strong schools and police protection; and negative peer influences, which may spread problem behavior.⁵⁸ Nevertheless, studies suggest that neighborhood characteristics can explain no more than 5 percent of the variation in children's achievement and 10 percent of the variation in their behavior.⁵⁹

A recent experiment that offered families the opportunity to move from high-poverty to low-poverty neighborhoods provides a compelling test of the extent to which neighborhood matters for children's development. The results are striking. The Moving to Opportunity (MTO) experiment gave housing-project residents in five of the nation's largest cities a chance to move to low-poverty neighborhoods. But data collected four to seven years after the families moved revealed no differences between program and control

group children, even among those who were preschoolers when the program began.⁶⁰ Despite dramatic improvements in neighborhood conditions, children made no gains on test scores, school success or engagement, or behaviors. Why not?

One possible explanation is that although the neighborhoods improved a great deal, the schools attended by the children did not.⁶¹ And although MTO-related neighborhood advantages appeared to improve the mental health of mothers, they did not translate into other kinds of household resources or advantages that might have promoted children's well-being.⁶² After moving, MTO adults still resembled their control-group counterparts in their employment, welfare dependence, family income, parenting practices, and connections to their children's schools and to the parents of their children's friends.

Residential mobility programs, then, will not by themselves remedy the achievement problems of children in public housing and in high-poverty neighborhoods. Interventions focused exclusively on neighborhoods rather than on influences directly related to the child, family, and school cannot solve the myriad problems of children growing up in high-poverty urban neighborhoods.

Can Family SES Account for the Gaps?

Both theory and evidence suggest that the family socioeconomic environments in which children are reared may account for at least some differences in school-entry achievement. Here we review so-called accounting studies, which estimate the extent to which socioeconomic differences across groups are linked to racial and ethnic achievement gaps.⁶³ We reiterate our warning regarding causation: accounting studies assume that

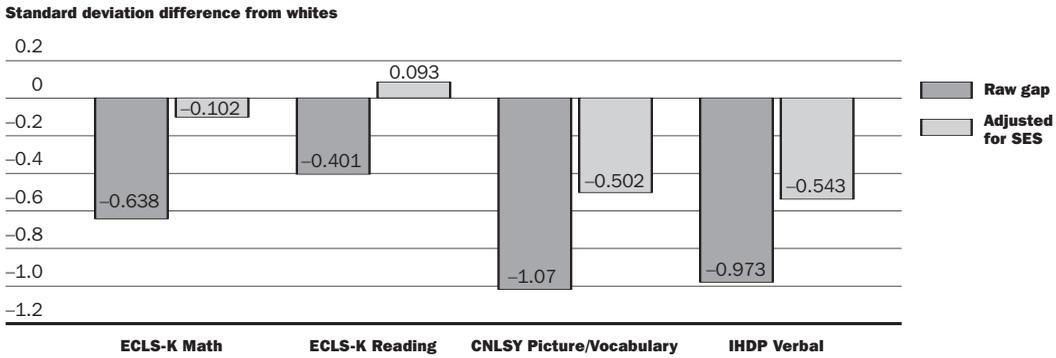
SES differences *cause* achievement differences. To the extent that this does not hold true, estimates of the effect of socioeconomic differences on achievement gaps will likely overstate the potential of policies to eliminate differences.

Accounting for the Gaps

Figure 3 shows representative results from four recent studies of black-white differences in test scores as children enter school. Math and reading results (in the left half of the figure) are taken from the study conducted by Ronald Fryer and Steven Levitt using data from the ECLS-K.⁶⁴ The first bars show the simple, unadjusted mean racial and ethnic differences. As noted, black children score two-thirds of a standard deviation lower than whites in math and close to half a standard deviation lower in reading.

To what extent are these gaps due to differences in socioeconomic resources? A handful of family and child SES-related measures explain nearly all of the racial math gap and the entire racial reading gap. These differences in family and child background include SES composite, number of children's books in the home, age of entry into kindergarten, birth weight, age of mother at time of birth, and whether the mother received the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). The same characteristics also explain racial and ethnic gaps in each of the five components of the math test (for example, counting, relative size) and the reading test (letter recognition, beginning sounds) and the gaps for sample subgroups defined by child gender as well as the location and racial composition of the child's school.⁶⁵ Figure 4, also using data drawn from the Fryer and Levitt study, shows that the same set of SES-related family characteristics accounts for nearly all of the math

Figure 3. Accounting for Black-White Test Score Gaps with SES



Sources: ECLS-K data are taken from Fryer and Levitt, “Understanding the Black-White Test Score Gap in the First Two Years of School,” *Review of Economics and Statistics* 86 (2004): 447–64; NLSY data are taken from Meredith Phillips, Jeanne Brooks-Gunn, Greg J. Duncan, Pamela Klebanov, and Jonathan Crane, “Family Background, Parenting Practices, and the Black-White Test Score Gap,” in *The Black-White Test Score Gap*, edited by Christopher Jencks and Meredith Phillips (Brookings, 1998), pp. 103–45; IHDP data are taken from Jeanne Brooks-Gunn, Pamela K. Klebanov, Judith Smith, Greg J. Duncan, and Kyunghee Lee, “The Black-White Test Score Gap in Young Children: Contributions of Test and Family,” *Applied Developmental Science* 7, no. 4 (2003): 239–52.

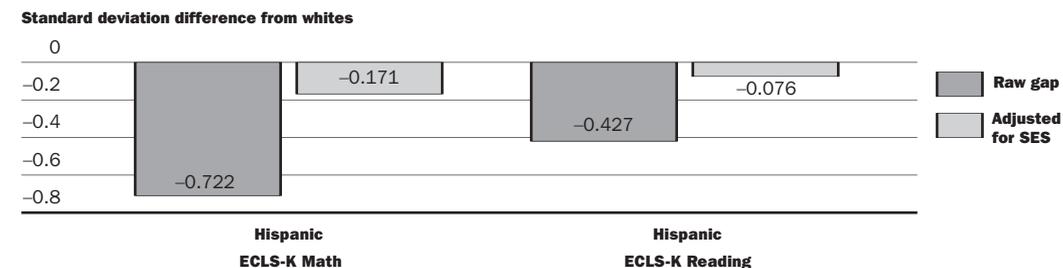
Note: Effect sizes calculated by authors using the standard deviation for the sample of white students as the denominator. Variables used to adjust for SES gap in Fryer and Levitt include an SES composite, number of children’s books in the home, age of entry into kindergarten, birth weight, age of mother at time of birth, and whether the mother received the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Variables used to adjust for SES in Phillips and others include grandparents’ education; grandparents’ occupation; Southern roots; mother’s number of siblings; mother’s number of older siblings; no one in mother’s family subscribed to magazines, newspapers, or had a library card; percent of white students in mother’s high school; student-teacher ratio in mother’s high school; percent teacher turnover in mother’s high school; mother’s educational expectations; mother’s self esteem index; two indicators for mother’s sense of control or mastery; interviewer’s assessment of mother’s attitude toward interview; mother’s education; father’s education; child birth weight; child birth order; family structure; mother’s age at child’s birth; household size; set of dummy variables for average income; mother’s AFQT score; mother’s class rank in high school; and interviewer’s assessment of mother’s understanding of interview. For the Brooks-Gunn and others analyses the SES variables include measures of the income-to-needs ratio averaged over three years, maternal education, family structure, maternal age at birth, and maternal verbal ability.

and reading gaps between Hispanic and white children.

It is unusual for researchers to find that SES differences explain all the racial and ethnic test score gaps. For example, the third set of bars in figure 3 summarizes results from a study of gaps in the picture-vocabulary scores

of black and white five- and six-year-olds from the Children of the National Longitudinal Study of Youth (CNLSY).⁶⁶ Not only is the unadjusted gap much larger in the CNLSY than in the ECLS-K data—more than 1 standard deviation, or about 16 points on our reference test—but a similar collection of family background measures accounts

Figure 4. Accounting for White-Hispanic Test Score Gaps with SES



Source: Data are taken from Fryer and Levitt, “Understanding the Black-White Test Score Gap,” table 2.

for only about half of the racial gap, or about 7–8 points.

Figure 3 also presents data on five-year-olds in the Infant Health and Development Program (IHDP) study.⁶⁷ As with the CNLSY, the IHDP verbal test score gap amounts to about a full standard deviation (about 15 points), and about half the gap (8 points) appears to be the result of SES differences between white and black children. Although these findings may appear to be contradictory, an interesting consistency is that SES explains roughly the same absolute amount of the gap. In all studies, a collection of SES-related measures seems to account for a difference of about half a standard deviation in white-black test scores (7–8 points), regardless of the assessments used or the populations studied.

Summary

On average, when black and Hispanic children begin school, their academic skills lag behind those of whites. Accounting studies find that differences in socioeconomic status explain about half a standard deviation of the initial achievement gaps. But because none of the accounting studies is able to adjust for a full set of genetic and other confounding causes of achievement, we regard them as providing upper-bound estimates of the role of family socioeconomic status.

If, indeed, differences in the socioeconomic backgrounds of young white, black, and Hispanic children play a causal role in creating achievement gaps, what are the implications for policy? The answer is far from clear. First, no policies address “socioeconomic status” directly. They address only its components—income, parental schooling, family structure, and the like. Moreover, wise policy decisions require an understanding of both causal

mechanisms *and* cost-effective interventions that can produce desired changes.

To illustrate, suppose that increasing maternal schooling by one year raises children’s kindergarten achievement scores by one quarter of a standard deviation, or roughly 4 points on our reference test. With the achievement gaps between whites and both blacks and Hispanics at one-half to three-quarters of a standard deviation (7 to 11 points), a policy that could increase maternal schooling for all black and Hispanic mothers by an average of one or two years would significantly narrow the achievement gap. But few programmatic interventions can deliver such gains, and whether further expansions in educational funding will increase Hispanic or black mothers’ educational attainment will depend on the specifics of how the money is spent.

In the case of household income, it appears that reducing the racial and ethnic differences in family income by several thousand dollars would reduce achievement gaps. Political support for work-based approaches to boosting income, such as the earned income tax credit, has increased considerably over the past decade. Moreover, because income appears to matter more for preschoolers than for older children—and much more for poor children than for others—it seems that an effective policy would be to adopt child-focused redistributive efforts using, say, European-style child allowances or increases in the EITC with benefits restricted to families with preschool children. Such programs may prove politically feasible, because it would be considerably cheaper to cover only a fraction of children than to cover all children.⁶⁸

All in all, given the dearth of successful large-scale interventions, it may be wise to assign

only a modest role to programs that aim to increase parents' socioeconomic resources. In the end, policies that directly target chil-

dren's aptitude or mental and physical health, discussed in other articles in this issue, may be the most efficient way to address the gap.

Endnotes

1. See the article in this issue by Donald A. Rock and A. Jackson Stenner for a discussion of the different tests and estimates of the gap.
2. The ECLS-K asked children's parents about their own schooling, occupations, and household incomes and then combined these elements into a single socioeconomic status index.
3. Robert Haveman and Barbara Wolfe, *Succeeding Generations: On the Effect of Investments in Children* (New York: Russell Sage Foundation, 1994); Gary Evans, "The Environment of Childhood Poverty," *American Psychologist* 59 (2004): 77–92.
4. Charles Mueller and Toby L. Parcel, "Measures of Socioeconomic Status: Alternatives and Recommendations," *Child Development* 52 (1981): 13–30.
5. For a discussion of differing approaches to measuring socioeconomic status, see Kenneth A. Bollen, Jennifer L. Glanville, and Guy Stecklov, "Socioeconomic Status and Class in Studies of Fertility and Health in Developing Countries," *Annual Review of Sociology* 27 (2001): 153–85; Robert Hauser and John Robert Warren, "Socioeconomic Indexes for Occupations: A Review, Update, and Critique," *Sociological Methodology* 27: 177–298.
6. Bollen, Glanville, and Stecklov, "Socioeconomic Status and Class" (see note 5).
7. Greg Duncan and Katherine A. Magnuson, "Off with Hollingshead: Socioeconomic Resources, Parenting, and Child Development," in *Socioeconomic Status, Parenting, and Child Development*, edited by Marc Bornstein and Robert Bradley (Mahwah, N.J.: Lawrence Erlbaum Associates, 2001), pp. 83–106.
8. We do not review the literature on the effects of occupation on young children primarily because the research is sparse and there are no clear interventions that directly target occupation.
9. Greg Duncan and Jeanne Brooks-Gunn, eds., *Consequences of Growing Up Poor* (New York: Russell Sage, 1997); Evans, "The Environment of Childhood Poverty" (see note 3); Katherine A. Magnuson and Greg Duncan, "Parents in Poverty," in *Handbook of Parenting*, edited by Marc Bornstein (Mahwah, N.J.: Lawrence Erlbaum Associates, 2002), pp. 95–121. Vonnie McLoyd, "Socioeconomic Disadvantage and Child Development," *American Psychologist* 53 (1998): 185–204.
10. Judith Smith, Jeanne Brooks-Gunn, and Pamela Klebanov, "The Consequences of Living in Poverty on Young Children's Cognitive Development," in *Consequences of Growing Up Poor*, edited by Greg Duncan and Jeanne Brooks-Gunn (New York: Russell Sage, 1997), pp. 132–89.
11. Duncan and Brooks Gunn, *Consequences of Growing Up Poor* (see note 9); Smith, Brooks-Gunn, and Klebanov, "The Consequences of Living in Poverty" (see note 10). See also Eric Dearing, Kathleen McCartney, and Beck A. Taylor, "Change in Family Income-to-Needs Matters More for Children with Less," *Child Development* 72 (2001): 1779–93; Greg Duncan and others, "How Much Does Childhood Poverty Affect the Life Chances of Children?" *American Sociological Review* 63 (1998): 406–23.
12. Smith, Brooks-Gunn, and Klebanov, "The Consequences of Living in Poverty" (see note 10).
13. Meredith Phillips and others, "Family Background, Parenting Practices, and the Black-White Test Score Gap," in *The Black-White Test Score Gap*, edited by Christopher Jencks and Meredith Phillips (Brookings, 1998).

14. Pamela A. Morris and others, *How Welfare and Work Policies Affect Children: A Synthesis of Research* (New York: Manpower Demonstration Research Corporation, 2001).
15. Krueger and Whitmore estimate that the one-fifth standard deviation increase in test scores from the Tennessee STAR class-size experiment could increase future earnings between \$5,000 and \$50,000, depending on assumed discount and future earnings growth rates. The .07 effect size, if permanent, would increase earnings by one-third of these amounts. See Alan Krueger and Diane Whitmore, "The Effect of Attending a Small Class in the Early Grades on College Test Taking and Middle School Test Results: Evidence from Project STAR," *Economic Journal* 11 (2001): 1–28.
16. James Heckman, Robert LaLonde, and Jeffrey Smith, "The Economics and Econometrics of Active Labor Market Programs," in *Handbook of Labor Economics*, edited by Orley Ashenfelter and David Card (New York: Elsevier, 1999), pp. 1865–2097.
17. Marcia K. Meyers and others, "Inequality in Early Childhood Education and Care: What Do We Know?" in *Social Inequality*, edited by Kathryn Neckerman (New York: Russell Sage Foundation, forthcoming).
18. U.S. House of Representatives, Committee on Ways and Means, *2004 Green Book* (<http://waysandmeans.house.gov/Documents.asp?section=813> [April 26, 2004]).
19. Council of Economic Advisers, *Good News for Low Income Families: Expansions in the Earned Income Tax Credit and the Minimum Wage* (Washington, 1998).
20. Bruce Meyer and Dan T. Rosenbaum, "Welfare, the Earned Income Tax Credit and the Labor Supply of Single Mothers," *Quarterly Journal of Economics* 116 (2001): 1063–114.
21. Gary Becker, *A Treatise on the Family* (Harvard University Press, 1981).
22. David Card, "The Causal Effect of Education on Earnings," in *Handbook of Labor Economics*, vol. 3A, edited by Orley Ashenfelter and David Card (New York: Elsevier, 1999), pp. 1801–63.
23. Erika Hoff, "The Specificity of Environmental Influence: Socioeconomic Status Affects Early Vocabulary Development via Maternal Speech," *Child Development* 74 (2003): 1368–78; Luis Laosa, "Maternal Teaching Strategies in Chicano and Anglo-American Families: The Influence of Culture and Education on Maternal Behavior," *Child Development* 51 (1980): 759–65; Robert T. Michael, *The Effect of Education on Efficiency in Consumption* (Columbia University Press, 1972).
24. Four-year college degree attainment is from authors' calculations from the ECLS–K data. For more detailed information on maternal schooling, see http://nces.ed.gov/programs/coe/2003/section1/tables/t02_1a.asp [April 13, 2004].
25. Kiki Roe and Robin Bronstein, "Maternal Education and Cognitive Processing at Three Months as Shown by Infants' Vocal Response to Mother vs. Stranger," *International Journal of Behavioral Development* 11 (1988): 389–95.
26. Pamela Davis-Kean and Katherine Magnuson, "The Influence of Parental Education on Child Development," mimeo, University of Michigan, 2004; James A. Mercy and Lulu Steelman, "Familial Influence on Intellectual Attainment of Children," *American Sociological Review* 42 (1982): 532–42.
27. See Michelle Neiss and David C. Rowe, "Parental Education and Child's Verbal IQ in Adoptive and Biological Families in the National Longitudinal Study of Adolescent Health," *Behavior Genetics* 30 (2000):

- 487–95; Mark R. Rosenzweig and Kenneth I. Wolpin, “Are There Increasing Returns to Intergenerational Production of Human Capital? Maternal Schooling and Child Intellectual Development,” *Journal of Human Resources* 29 (1994): 670–93. Studies using European data have been less conclusive; see Sandra E. Black, Paul J. Devereux, and Kjell G. Salvanes, “Why the Apple Doesn’t Fall Far from the Tree,” Working Paper 10066 (Cambridge, Mass.: National Bureau of Economic Research, 2004); Eric Plug, “Estimating the Effects of Mothers’ Schooling on Children’s Schooling Using a Sample of Adoptees,” *American Economic Review* 94 (2003): 358–68. Many studies attempt to adjust for parent cognitive ability.
28. Robert Haveman and Barbara Wolfe, “The Determinants of Children’s Attainments: A Review of Methods and Findings,” *Journal of Economic Literature* 23 (1995): 1829–78; Katherine Magnuson, “The Effect of Increases in Maternal Education on Children’s Academic Trajectories: Evidence from the NLSY,” mimeo, Columbia University, 2004.
29. The National Evaluation of Welfare-to-Work Strategies Child Outcome Study (NEWWS COS). See Katherine Magnuson, “The Effect of Increases in Welfare Mothers’ Education on Their Young Children’s Academic and Behavioral Outcomes: Evidence from the National Evaluation of Welfare-to-Work Strategies Child Outcomes Study,” Institute for Research on Poverty Discussion Paper (University of Wisconsin, 2003), pp. 1274–303.
30. Mark Dynarski, “Making Do with Less: Interpreting the Evidence from Recent Federal Evaluations of Dropout Prevention Programs,” paper presented at the conference Dropouts: Implications and Findings, held at Harvard University, 2001.
31. Jodie Roth and Jeanne Brooks-Gunn, “Promoting Healthy Adolescents: Synthesis of Youth Development Program Evaluations,” *Journal of Research on Adolescence* 8 (1998): 423–59; David L. Dubois and others, “Effectiveness of Mentoring Programs for Youth: A Meta-Analytic Review,” *Journal of Community Psychology* 30 (2002): 157–97.
32. Frank F. Furstenberg, Jeanne Brooks-Gunn, and S. Philip Morgan, *Adolescent Mothers in Later Life* (Cambridge University Press, 1987); John M. Love and others, *Making a Difference in the Lives of Infants and Toddlers and Their Families: The Impacts of Early Head Start*, vol. 1, *Final Technical Report* (Princeton: Mathematica Policy Research, 2002).
33. Sharon M. McGroder and others, *National Evaluation of Welfare-to-work Strategies: Impacts on Young Children and Their Families Two Years after Enrollment: Findings from the Child Outcomes Study* (U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation, Administration for Children and Families, 2000); Janet C. Quint, Johannes M. Bos, and Denise F. Polit, *New Chance: Final Report on a Comprehensive Program for Young Mothers in Poverty and Their Children* (New York: Manpower Research Demonstration Corporation, 1997).
34. Susan Dynarski, “The Consequences of Lowering the Cost of College,” *American Economic Review* 92 (2002): 279–85; Neil Seftor and Sarah Turner, “Back to School: Federal Student Aid Policy and Adult College Enrollment,” *Journal of Human Resources* 37 (2002): 336–52; Sarah Turner and John Bound, “Closing the Gap or Widening the Divide? The Effects of the G.I. Bill and World War II on the Educational Outcomes of Black Americans,” *Journal of Economic History* 63 (2003): 145–77.
35. Daron Acemoglu and Joshua Angrist, “How Large Are the Social Returns to Compulsory Schooling Effects? Evidence from Compulsory Schooling Laws,” Working Paper 7444 (Cambridge, Mass.: National Bu-

- reau of Economic Research, 1999); Philip Oreopoulos, Marianne Page, and Anne H. Stevens, "Does Human Capital Transfer from Parent to Child? The Intergenerational Effects of Compulsory Schooling," Working Paper 10164 (Cambridge, Mass.: National Bureau of Economic Research, 2003).
36. Sara McLanahan and Gary Sandefur, *Growing Up with a Single Parent: What Hurts, What Helps* (Harvard University Press, 1994).
37. U. S. Census Bureau. http://ferret.bls.census.gov/macro/032003/pov/new03_100_01.htm accessed April 26, 2004.
38. Paul R. Amato, "Children's Adjustment to Divorce: Theories, Hypotheses and Empirical Support," *Journal of Marriage and the Family* 55 (1993): 23–38; K. Alison Clarke-Stewart and others, "Effects of Parental Separation and Divorce on Very Young Children," *Journal of Family Psychology* 14 (2000): 304–26; Rebecca L. Coley, "Children's Socialization Experiences and Functioning in Single Mother Households: The Importance of Fathers and Other Men," *Child Development* 69 (1998): 219–30; Jane E. Miller and Diane Davis, "Poverty History, Marital History, and Quality of Children's Home Environments," *Journal of Marriage and the Family* 59 (1997): 996–1007.
39. Maureen Black, Howard Dubowitz, and Raymond H. Starr, "African American Fathers in Low Income, Urban Families: Development, Behavior, and Home Environment of Three-Year-Old Children," *Child Development* 70 (1999): 967–78; Coley, "Children's Socialization Experiences" (see note 38).
40. For data on all children, see www.childtrendsdatabank.org/tables/59_Table_1.htm [March 24, 2004].
41. McLanahan and Sandefur, *Growing Up with a Single Parent* (see note 36).
42. Sara McLanahan, "Parent Absence or Poverty: Which Matters More?" in *Consequences of Growing Up Poor*, edited by Greg Duncan and Jeanne Brooks-Gunn (New York: Russell Sage Foundation, 1997), pp. 35–48.
43. Marcia J. Carlson and Mary E. Corcoran, "Family Structure and Children's Behavioral and Cognitive Outcomes," *Journal of Marriage and the Family* 63 (2001): 779–92; Elizabeth Cooksey, "Consequences of Young Mothers' Marital Histories for Children's Cognitive Development," *Journal of Marriage and the Family* 59 (1997): 245–61; McLanahan, "Parent Absence or Poverty" (see note 42); Thomas DeLeire and Ariel Kalil, "Good Things Come in 3's: Multigenerational Coresidence and Adolescent Adjustment," *Demography* 39 (2002): 393–413.
44. Stephanie J. Ventura, T. J. Mathews, and Brady E. Hamilton, "Teenage Births in the United States: State Trends, 1991–2000, an Update," *National Vital Statistics Reports* 50 (2002): 1–2.
45. Rebecca L. Coley and P. Lindsay Chase-Lansdale, "Adolescent Pregnancy and Parenthood: Recent Evidence and Future Directions," *American Psychologist* 53 (1998): 152–66.
46. Carlson and Corcoran, "Family Structure and Children's Behavioral and Cognitive Outcomes" (see note 43); Clarke-Stewart and others, "Effects of Parental Separation and Divorce" (see note 38).
47. Thomas G. O'Connor and others, "Are Associations between Parental Divorce and Children's Adjustment Genetically Mediated? An Adoption Study," *Developmental Psychology* 36 (2000): 429–37.
48. Sara Jaffee and others, "Why Are Children Born to Teen Mothers at Risk for Adverse Outcomes in Young Adulthood? Results from a 20-Year Longitudinal Study," *Development and Psychopathology* 13 (2001):

- 377–97; Judith A. Levine, Harold Pollack, and Maureen Comfort, “Academic and Behavioral Outcomes among Children of Young Mothers,” *Journal of Marriage and the Family* 63 (2001): 355–69; Ruth N. L. Turley, “Are Children of Young Mothers Disadvantaged Because of Their Mother’s Age or Family Background?” *Child Development* 74 (2003): 465–74.
49. O’Connor and others, “Are Associations between Parental Divorce and Children’s Adjustment Genetically Mediated?” (see note 47).
50. Jaffee and others, “Why Are Children Born to Teen Mothers at Risk” (see note 48); Wendy Sigle-Rushton and Sara McLanahan, “For Richer or Poorer: Marriage as an Anti-Poverty Strategy in the United States,” Working Paper 01–17–FF (Princeton University, Center for Research on Child Wellbeing, 2003).
51. M. Robin Dion and others, “Helping Unwed Parents Build Strong and Healthy Marriages: A Conceptual Framework for Interventions” (Princeton: Mathematica Policy Research, 2002).
52. Sigle-Rushton and McLanahan, “For Richer or Poorer” (see note 50).
53. Douglas Kirby, *Emerging Answers: Research Findings on Programs to Reduce Teen Pregnancy* (Washington: National Campaign to Prevent Teen Pregnancy, 2001).
54. Coley and Chase-Lansdale, “Adolescent Pregnancy and Parenthood” (see note 45); Andrea Kane and Isabel V. Sawhill, “Preventing Teen Childbearing” in *One Percent for the Kids*, edited by Sawhill (Brookings, 2003), pp. 56–75.
55. Coley and Chase-Lansdale, “Adolescent Pregnancy and Parenthood” (see note 45).
56. Jeanne Brooks-Gunn, Greg J. Duncan, and J. Lawrence Aber, *Neighborhood Poverty: Context and Consequences for Children*, vols. 1 and 2 (New York: Russell Sage, 1997).
57. Robin Jarrett, “African American Family and Parenting Strategies in Impoverished Neighborhoods,” *Qualitative Sociology* 20 (1997): 275–88.
58. Christopher Jencks and Susan Mayer, “The Social Consequences of Growing Up in a Poor Neighborhood,” in *Inner-City Poverty in the United States*, edited by Laurence E. Lynn and Michael G. H. McGeary (Washington: National Academy Press., 1990), pp. 111–86; Robert J. Sampson, Jeffrey D. Morenoff, and Thomas Ganon-Rowley, “Assessing Neighborhood Effects: Social Processes and New Directions in Research,” *Annual Review of Sociology* 94 (2002): 774–80.
59. Tama Leventhal and Jeanne Brooks-Gunn, “The Neighborhoods They Live In: The Effects of Neighborhood Residence on Child and Adolescent Outcomes,” *Psychological Bulletin* 126 (2000): 309–37.
60. Larry Orr and others, *Moving to Opportunity Interim Impacts Evaluation* (U.S. Department of Housing and Urban Development, Office of Policy Development and Research, 2003), pp. 1–178; Lisa Sanbonmatsu and others, “Neighborhoods and Academic Achievement: Results from the Moving to Opportunity Experiment,” Industrial Relations Section Working Paper (Princeton University, 2004).
61. Sanbonmatsu and others, “Neighborhoods and Academic Achievement” (see note 60).
62. Orr and others, *Moving to Opportunity* (see note 60); Jeffrey Kling and others, “Moving to Opportunity and Tranquility: Neighborhood Effects on Adult Economic Self-Sufficiency and Health from a Randomized Housing Voucher Experiment,” Industrial Relations Section Working Paper (Princeton University, 2004).

63. Whereas all of the accounting studies do a good job of measuring family components of SES, few measure neighborhood conditions very well. An exception is Phillips and others, “Family Background, Parenting Practices, and the Black-White Test Score Gap” (see note 13), whose look at racial gaps at age five includes an assessment of the role of conditions in the neighborhoods in which the children are raised. While they find considerable racial differences in neighborhood conditions, these appear inconsequential for the racial gap. This is not surprising, given that a general finding from the neighborhood effects literature is that neighborhood conditions add little to the explanation of child outcomes once family conditions are taken into account; see Brooks-Gunn, Duncan, and Aber, *Neighborhood Poverty* (see note 56). In the accounting exercises, this translates into the finding that racial differences in neighborhood conditions account for little of the gap, once racial differences in family conditions are taken into account.
64. Ronald Fryer and Steven D. Levitt, “Understanding the Black-White Test Score Gap in the First Two Years of School,” *Review of Economics and Statistics* 86 (2004): 447–64.
65. Using the same data, other scholars have reached similar conclusions. See Valerie Lee and David Burkam, *Inequality at the Starting Gate: Social Background Differences in Achievement as Children Begin School* (Washington: Economic Policy Institute, 2002).
66. Phillips and others, “Family Background, Parenting Practices, and the Black-White Test Score Gap” (see note 13).
67. Jeanne Brooks-Gunn and others, “The Black-White Test Score Gap in Young Children: Contributions of Test and Family Characteristics,” *Applied Developmental Science* 7 (2003): 239–52.
68. Greg Duncan and Katherine Magnuson, “Promoting the Healthy Development of Young Children,” in *One Percent for the Kids*, edited by Isabel Sawhill (Brookings, 2003), pp. 16–39.