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Increases in family income inequality in the United States have translated into widening gaps in educational achievement and attainments between children from low- and high-income families. We describe the mechanisms that have produced this disturbing trend. We argue that the three dominant policy approaches states and the federal government have used to improve the education of the disadvantaged have had at best modest success in improving education for disadvantaged children. To conclude, we describe the building blocks for an American solution to the problem of growing inequality of educational outcomes.

Keywords: inequality, educational outcomes, accountability, school supports

America has always taken pride in being the land of opportunity, a country in which hard work and sacrifice result in a better life for one's children. In the quarter century following World War II, the pride was justified, as the benefits of substantial economic growth were shared by both high- and low-income families (Duncan and Murnane 2011). But, beginning in the 1970s, economic changes favoring highly educated workers, plus demographic shifts such as the rise of single-parent families, produced sharply growing income gaps between high- and low-income families.

Figure 1 shows the average annual cash income in a particular year (in 2012 dollars) for children at the 20th, 80th, and 95th percentiles of the nation's family income distribution.[1] Compared with 1970, the 2010 cash family income at the 20th percentile has fallen by more than 25 percent. In contrast, the incomes of families at the 80th percentile grew by 23 percent, to $125,000, and the incomes of the rich-

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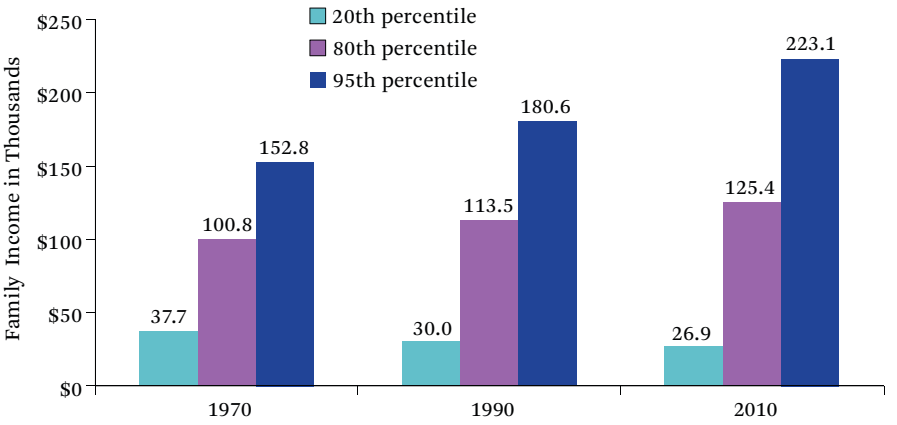
This chapter draws from the introductory chapter in *Whither Opportunity?* and from our 2014 book. We thank the Russell Sage Foundation and the Spencer Foundation for supporting the research and allowing us to summarize the lessons from our books here. Direct correspondence to: Greg J. Duncan at gduncan@uci.edu, School of Education, University of California, Irvine, 2001 Education, Irvine, CA 92697; and Richard J. Murnane at richard_murnane@harvard.edu, Gutman Library, Rm. 406B, Harvard University, 6 Appian Way, Cambridge, MA 02138.

1. All dollar figures in this paper are expressed in 2012 dollars, and consequently are net of inflation. The income figures are drawn from the Current Population Survey (for a description, see Duncan and Murnane 2014). We are grateful to Sean Reardon and Demetra Kalogrides for supplying these data. Note that they are weighted by children rather than families or households, which produces a somewhat different time series than one sees with published Census data on family incomes. This means the fact that the 20th percentile family income (in 2012 dollars) was $37,700 in 1970 in figure 1 means that 20 percent of the nation's children live in families with income below that level. Because lower-income families tend to have more children than higher-income families, fewer than 20 percent of the nation's families in 1970 had income lower than $37,700.

Figure 1. Children's Family Income over Time



Source: Duncan and Murnane 2011. © Russell Sage Foundation.
Note: Chart shows 20th, 80th and 95th percentiles of the distribution of family incomes for all children ages five to seventeen. They are based on data from the U.S. Bureau of the Census and are adjusted for inflation. Amounts are in 2012 dollars.

est 5 percent of families rose even more. The stagnation of the incomes of families at the lower end of the spectrum is also reflected in the nation's child poverty rate, which increased by more than 6 percentage points between 1970 and 2011, but appears to have fallen modestly using a more comprehensive measure of poverty.[2] These growing income gaps translated into increased gaps between the academic achievement and educational attainments of children from high- and low-income families.

In this paper, we explain the mechanisms through which rising family income inequality result in growing inequality of educational outcomes between children growing up in low- and higher-income families. We then interpret the evidence on the consequences of several decades of attempts to improve the nation's schools and describe our view of the public policies needed to improve schooling for students from low-income families.

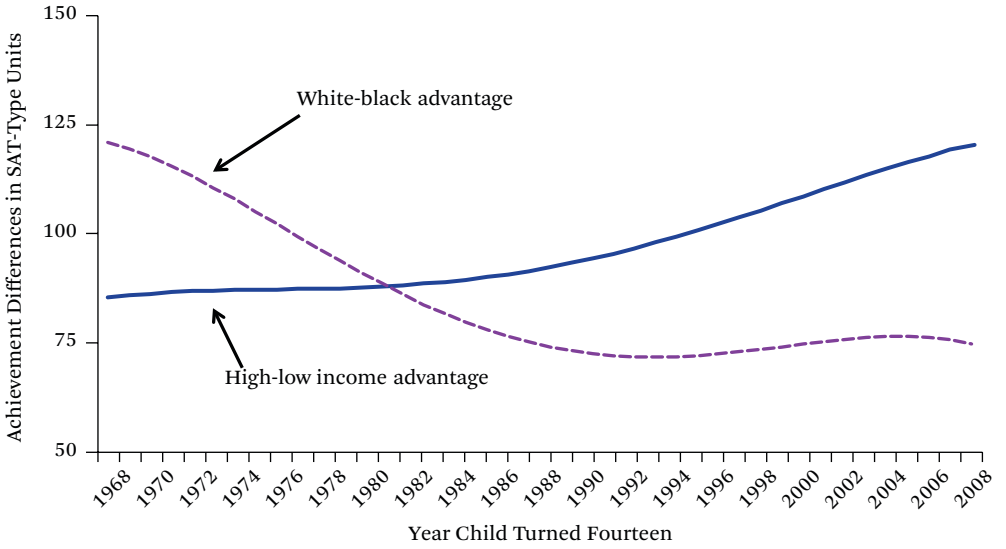
GROWING GAPS IN ACHIEVEMENT AND ATTAINMENT

Sean Reardon (2011) documents growth in the income-based gap in the reading skills of children over time (figure 2). Among children who were adolescents in the late 1960s, test scores in reading of low-income children lagged behind those of their better-off peers by four-fifths of a standard deviation—about 80 points on an SAT-type test. Forty years later, this gap was 50 percent larger, amounting to nearly 125 SAT-type points. Trends in mathematics skill gaps were similar (Reardon 2011). Growth in these income-based achievement gaps is surprising in light of the fact that racial gaps in test scores have diminished considerably in the fifty years since *Brown v. Board of Education* (Magnuson and Waldfogel 2008).

Growing achievement gaps mask an important fact: achievement levels of low-income children have increased over the past three decades. Most notably, the mathematics scores

2. Official poverty data are based on a measure of family economic resources using cash incomes and do not reflect the growing value of near-cash transfers such as food stamps and the Earned Income Tax Credit. Moreover, the thresholds used in the poverty calculations are not adjusted for changes in living standards. Liana Fox and her colleagues' (2014) calculation of poverty trends for children using a more comprehensive measure of poverty shows that it fell by about 3 percentage points between 1970 and 2011.

Figure 2. Race and Income-Based Gaps in Reading Achievement in SAT-Type Units



Source: Reardon 2011. © Russell Sage Foundation.

of low-income children increased by a substantial 40 points—0.40 standard deviations—over the thirty years between the late 1970s and late 2000s.[3] Achievement *gaps* increased because the scores of children at the top of the income distribution grew at a much faster rate—70 points, or 0.70 standard deviations.

Given the importance of academic preparation to success in postsecondary education, it should come as no surprise that growth in the income-based gaps in children's reading and mathematics achievement have contributed to a growing gap in the rate of college completion. As with test scores, college graduation rates for children from low-income (defined as the bottom quartile) families rose—from 5 percent for children who were teenagers in the late 1970s to 9 percent for those who were teenagers in the mid-1990s. But this 4 percentage point increase was dwarfed by the 18 percentage point jump for children with family income in the top quartile, from slightly more than one-third to more than one-half (Bailey and Dynarski 2011). Analysts differ in their assessments of the relative importance of college costs and academic preparation in explaining the increasing gulf between the college graduates rates of affluent and low-income children in our country (Heckman and Krueger 2005). However, both are rooted, at least in part, in the growth in family income inequality.

HOW RISING INEQUALITY INFLUENCES CHILDREN'S SKILLS AND ATTAINMENTS

To understand how rising inequality in family incomes contributed to rising inequality in educational outcomes between children from low- and high-income families, we need to understand the roles of families and schools. We consider these two important contexts for children's lives in turn.

Families

We begin by examining the skills and behaviors of children just as they enter kindergarten. Economists and developmental psychologists define school readiness in various ways, but nearly all definitions include elements of both

3. The average reading skills of low-income students also increased during this period, albeit at a slower and less stable rate.

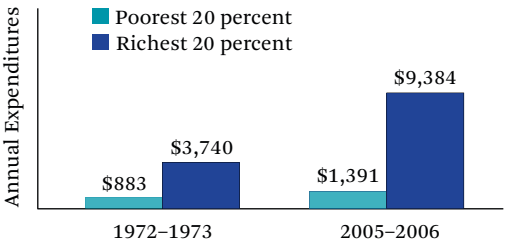
cognitive skills and socioemotional behaviors, to use the term favored by developmental psychologists (Duncan and Magnuson 2011). In the cognitive category, we concentrate on concrete academic skills such as literacy (for example, for kindergarteners, decoding skills such as beginning to associate sounds with letters at the beginning and end of words) and basic mathematics (for example, ability to recognize numbers and shapes and to compare relative sizes). Socioemotional behaviors include the ability to control impulses and focus on tasks, and a cluster of related behaviors including antisocial behavior, conduct disorders, and more general aggression.

We used data on a nationally representative sample of children entering kindergarten in September 1998 (ECLS-K) to measure differences in school entry skills and behaviors for children whose parental incomes placed them in the top and bottom quintiles of the income distribution. Kindergarten teachers rated kindergarteners from high-income families more than half a standard deviation ahead of those from low-income families in their abilities to pay attention and engage in school work, and more than a quarter of a standard deviation higher in their abilities to get along with peers and teachers. Much more striking were differences in math and literacy skills. These patterns are present before children start formal schooling, and illustrate the importance of families.

None of these income-based gaps in academic skills and behaviors had declined by the time the children were in fifth grade. Part of the explanation concerns differences in the school experiences of children from low- and higher-income families, a topic we take up below. Another part concerns differences between the experiences of these groups of children outside of school, especially during the summer months, when school is not in session (Raudenbush and Eschmann 2015).

Identifying the extent to which gaps in the skills and behaviors of children from low- and high-income families are caused by income itself as opposed to differences in innate capabilities or other family characteristics (such as two-parent family structure or parental education levels) is a challenge. An obvious advantage of a higher family income is that it provides more resources to buy books, computers, high-quality child care, summer camps, private schooling, and other enrichments. Figure 3 shows how spending, net of inflation, on child-enrichment goods and services increased to a far greater extent for families in the top quintile than for those in the bottom income quintile.[4] In the 1972–1973 survey, high-income families spent about $2,850 more per year per child on child enrichment than low-income families did. By the 2005–2006 school year, this gap had nearly tripled, to $8,000. Neeraj Kaushal, Katherine Magnuson, and Jane Waldfogel (2011) show that spending differences are largest for enrichment activities such as music lessons, travel, and summer camps. Differential access to such activities may explain the gaps in background knowledge and vocabulary between children from high-income families and those from low-income families that are so predictive of reading skills in the middle and high school years (Snow 2002).

Figure 3. Family Enrichment Expenditures on Children



Source: Duncan and Murnane 2011. © Russell Sage Foundation.
Note: Amounts are in 2012 dollars.

4. All dollar amounts are expressed in 2012 price levels. We are very grateful to Sabino Kornich of Emery University for providing these data, which are based on four large consumer expenditure surveys conducted between the early 1970s and the mid-2000s. The figures reflect only out-of-pocket expenditures. They do not reflect transfer payments such as food stamps.

Parents also spend different amounts and quality of time interacting with their children and exposing them to novel environments, and these factors can make a difference in their development. Meredith Phillips (2011) reports some striking differences in time-use patterns between low- and high-income families, especially time spent in "novel" places. She estimates that between birth and age six, children from high-income families will have spent 1,300 more hours in novel contexts (that is, other than at home, school, or the care of another parent or a day-care provider) than children from low-income families. These experiences, financed by the higher incomes of more affluent families, contribute to the background knowledge that is so critical for comprehending science and social studies texts in the middle-school grades.

The money and time expended on behalf of children also differ markedly between single- and two-parent families. Megan Sweeney (2011) shows that increases in both marital disruption and births to unmarried women have fueled a large rise in the proportion of children living with only one biological parent. These trends are particularly pronounced among African American children. Numerous studies have established that children who grow up with two biological parents complete more schooling than children who do not. Income differences are a leading explanation for these effects, although characteristics of couples who divorce or separate also matter.

It is difficult to untangle the precise effects of all these family-related factors—income and expenditures, family structure, time and language use—on the disparities in children's school readiness and later academic success that have emerged over the past several decades. But evidence establishing causal links between family income and children's school achievement suggests that the sharp increase in income gaps between high- and low-income families since the 1970s and the concomitant increases in the gaps in children's school success by income are hardly coincidental (Maynard 1977; Maynard and Murnane 1979; Duncan, Ziol-Guest, and Kalil 2010; Dahl and Lochner 2012).[5] Some children have always enjoyed greater benefits and advantages than others, but the income gap has widened dramatically over the past four decades. The implication of these studies is that, partly in consequence, the gap in children's school success has widened as well.

Schools

Researchers have long known that children attending schools with mostly low-income classmates have lower academic achievement and graduation rates than those attending schools with more affluent student populations. Less well understood until recently is the extent to which increasing family income inequality contributed to the segregation of low-income children in particular schools (which we call high-poverty schools) and the mechanisms through which school segregation by income affects children's developmental trajectories and long-term outcomes.

One pathway through which the increase in income inequality contributed to increases in inequality in educational outcomes is increases in residential segregation by income and the school segregation by income it engendered. As high-income families became wealthier, they tended to move to neighborhoods in which high housing prices excluded all but the affluent. This left other neighborhoods populated by primarily low-income families. Sean Reardon and Kendra Bischoff (2011) and Bischoff and Reardon (2014) document that residential segregation by income increased dramatically between 1980 and 2009. Because most American children attend school close to home, it is not surprising that school segregation by income also increased during this pe-

5. The causal evidence comes from studies that have examined the consequences for children's achievement of changes in family incomes that stemmed from intentional experiments or natural experiments. For example, Rebecca Maynard and Richard Murnane (1979) examine the consequences for children of families being assigned to treatment or control groups in the federally funded Gary, Indiana Negative Income Tax Experiment. Gordon Dahl and Lance Lochner (2012) study the effects on children's achievement of large increases in family income stemming from changes in the Earned Income Tax Credit.

riod (Altonji and Mansfield 2011; Owens 2015; Owens, Reardon, and Jencks 2014). Duncan and Murnane (2011, 2014) explain three mechanisms through which the increased concentration of children from low-income families in high-poverty schools reduced their effectiveness.

From 1972 to 1988, schools became more economically segregated, and teenagers from affluent families were less and less likely to have classmates from low-income families. The result is that a child from a poor family is two to four times as likely as a child from an affluent family to have classmates in both elementary and high school with low skills and with behavior problems (Duncan and Murnane 2011). This sorting matters, because the weak cognitive skills and greater behavioral problems among low-income children have a negative effect on the learning of their classmates. Especially important is the concentration in high-poverty schools of children who exhibit severe behavioral problems as a result of witnessing or experiencing abuse at home, in their neighborhood, or in the violence-prone country from which their family emigrated. Scott Carrell and Mark Hoekstra (2010) show that the presence of such children in a classroom dramatically reduces the academic achievement of their classmates.

Student mobility is another mechanism through which the increasing concentration of low-income children in high-poverty schools reduces their achievement. Urban families living in poverty move frequently and, as a result of school sorting by socioeconomic status, children from poor families are especially likely to attend schools with relatively high rates of new students arriving during the school year. Stephen Raudenbush, Marshall Jean, and Emily Art (2011) document that children attending elementary schools with considerable student mobility make less progress in mathematics than children attending schools with low student mobility do. Moreover, the negative effects apply to students who themselves are residentially stable as well as to those who are not, and likely stem at least in part from the disruption of instruction caused by the entry of new students into a class.

Teacher quality is another factor contributing to the weak academic performance of students in high-poverty schools. A substantial body of research has shown that schools serving high concentrations of poor, nonwhite, and low-achieving students find it difficult to attract and retain skilled teachers. Susan Johnson, Matthew Kraft, and John Papay (2012) show that this does not stem from teachers' reluctance to teach students from low-income families and students of color. Instead, high staff turnover in high-poverty schools stems from a lack of the strong leadership, culture of collaboration and shared responsibility, and resources necessary for success in educating a high-needs student population.

In summary, the decades-long increase in family income inequality has contributed to increasing gaps in educational achievement and attainment between children growing up in low- and high-income families. Some of the mechanisms concern family life directly. Others concern growing isolation of low-income children in high-poverty schools.

IMPROVING THE EDUCATION OF LOW-INCOME CHILDREN

For most of its history, the United States has relied on its public schools to solve difficult social problems. In the nineteenth century, the country was a leader in providing universal primary schooling. During the first three-quarters of the twentieth century, schools successfully taught generations of students the basic reading and mathematical skills they needed to fill the large number of assembly-line and back-office clerical jobs that the economy was producing (Goldin and Katz 2008). Can the nation's schools meet the current challenge of providing all students with the skills they will need to thrive in the rapidly changing economy and society of the twenty-first century?

The Difficult Challenge

It will be extraordinarily difficult to reverse the striking growth in inequality in educational outcomes in the United States for three separate but interrelated reasons. First, high-income parents, most of whom have college degrees, can invest in their children's education by choosing where to live and which schools their children will attend, and by using

Figure 4. Questions Reflecting 6th Grade Math Standards

Early 1980s

Carol can ride her bike ten miles per hour

If Carol rides her bike to the store, how long will it take?

To solve this problem, you would need to know

A. How far it is to the store.

B. What kind of bike Carol has.

C. What time Carol will leave.

D. How much Carol has to spend.

Common Core State Standards 2015

Mr. Ruiz is starting a marching band for his school. He first does research and finds the following data about other local marching bands.

	Band 1	Band 2	Band 3
Number of brass instrument players	123	42	150
Number of percussion instrument players	41	14	50

Mr. Ruiz realizes that there are ☐ brass instrument player(s) per percussion player.

Mr. Ruiz has 210 students who are interested in joining the marching band. He decides to have 80 percent of the band be made of percussion and brass instruments. Use the unit rate you found in Part A to determine how many students should play brass instruments. Show or explain all your steps.

PARCC sample grade 6 math item.

Source: Kidder 1989, 199; PARCC 2014.

their financial resources and knowledge to help their children acquire skills and knowledge beyond what is taught in school. In contrast, low-income parents, most of whom have no postsecondary education, lack the resources to provide for their children's education in the same ways.

A second factor challenging American education is the increase in the skills students are expected to master. The increase stems from the realization that computer-based technological changes and globalization have eliminated many repetitive jobs that paid good wages in the past and increased the demand for analytical problem-solving skills and communication skills (Levy and Murnane 2004). In response to these changes in the economy, almost all states introduced standards-based educational reforms aimed at assuring that all students master higher-order skills that only a modest minority of students learned in the past. Figure 4 illustrates the increase in standards by comparing a question from a mathematics test administered to Massachusetts sixth graders in the early 1980s (left column) and a sample question from a Common Core aligned mathematics examination that all Massachusetts eighth graders will take in 2016 (right column). Notice the differences between the two questions in reading level, in mathematical complexity, and in the type of answer required (multiple choice versus open-ended response with explanation required). Standards-based educational reforms make sense as a response to a changing economy. However, they increase the burden on high-poverty schools serving students who lack the vocabulary and background knowledge that are especially important in mastering complex skills.

A third factor hindering efforts of American educators to level the playing field is decentralization of governance. The U.S. Constitution delegates the governance of public education to the states, which in turn delegate decisions about curricula and teacher salaries to more than thirteen thousand local school districts. A consequence of this decentralization is that changes in national priorities for education pass through many levels of government, each of which provides its own interpretation of the change. The net result is that policy changes often have only modest effects on classroom

instruction and the educational experiences of children (Cohen and Spillane 1992).

As we explain in the second part of our book *Restoring Opportunity*, the difficulty of improving classroom instruction and enriching the educational experiences of children, especially those attending high-poverty schools, is documented in research on the consequences of the three major policy initiatives designed to improve the education of disadvantage children over the last fifty years: more money, more accountability, new governance structures. We briefly summarize themes from this research.

More Money

As a result of successful suits filed in state courts on behalf of families in low-spending districts, many states substantially increased funding of public education during the 1970s and 1980s. The federal government has also contributed to the funding of high-poverty schools with the passage of the Elementary and Secondary Education Act (ESEA) of 1965. In fiscal year 2013, Title 1 of ESEA provided more than $14 billion dollars for compensatory education. Analysts disagree on some of the consequences of increased school funding, but few if any believe that it has been effective in closing income-based gaps in children's achievement.

One reason is that a substantial part of state and federal education funding replaced locally raised tax revenues for schooling (Gordon 2004). A second is that relatively few school leaders have successfully used extra funds to improve teaching, a process that requires opening up classrooms to frequent observation by supervisors and peers, and enlisting all teachers in collaborative efforts to make instruction more coherent and consistent. Instead, most have used Title I funds to purchase goods and services that have little impact on the work teachers do with students, and consequently, have little impact on student achievement.

Almost all research on the impact of additional school funding on student achievement antedates standards-based educational reforms. As we discuss in more detail, evidence suggests that, at least in some settings, money is a critical ingredient for producing sustained improvements in student achievement in environments in which school-based educators are under considerable pressure to increase the skills of all students.

Test-Based Accountability

Frustrated that simply increasing funding had yielded no dramatic improvement in public education, state policymakers turned to standards-based educational reforms in the late 1980s and 1990s. The basic idea was to specify the skills students should master at each grade level and develop assessments to measure the extent to which children mastered them. Over time, standards-based reforms morphed into test-based accountability, with the emphasis on holding schools accountable for children's mastery of the skills laid out in state standards. Passage of the No Child Left Behind Act in 2001 made this federal policy.

Educators' responses to test-based accountability pressures have not consistently improved educational quality (Dee and Jacob 2011). NCLB created incentives for states to choose relatively undemanding tests and set low proficiency thresholds. Moreover, some schools, particularly those with the least capacity to educate children well, responded to accountability pressures by narrowing the curriculum and focusing undue attention on students with scores just below proficiency, neglecting children with lower scores (Neal and Schanzenbach 2010). The basic problem is that many school faculties lack the knowledge to increase substantially the skills of their students.[6] Accountability without supports to succeed in the requisite work does not serve children well.

6. Inadequacies in teachers' skills have several causes. First, the United States has never developed a high-quality system of screening applicants for the teaching profession, preparing potential teachers well, and rewarding excellence. Second, today's teachers are expected to teach all students to master skills that only a modest percentage of the nation's children mastered in the past. Third, relatively few schools are organized in a way that promotes the ongoing improvement of teachers' skills.

New Governance Structures

Some analysts have argued that the reason why more money and test-based accountability have not produced markedly better education for low-income children is that a great many school districts, especially those in big cities, are dysfunctional (Chubb and Moe 1990). An implication is that changes in governance structures may be needed. This provides one of the arguments for charter schools, which are publicly funded schools typically governed by a group or organization under a legislative contract (or charter) with the state or jurisdiction. The charter exempts the school from certain state or local rules and regulations. In return for autonomy, the charter school must meet the accountability standards stated in its charter. Currently almost six thousand charter schools operate in the country, serving almost 5 percent of the nation's public school students. Some of these schools have produced dramatic improvement in their students' skills (see, for example, Abdulkadiroğlu et al. 2011; Dobbie and Fryer 2011). However, the best available evidence is that most charter schools are not more effective than conventional public schools at improving the skills of low-income children (CREDO 2013).

In summary, the three dominant reform strategies that the United States has used to improve the education of disadvantaged children in recent decades have had at best modest success. None has succeeded in closing the growing gaps in educational achievement and attainment between children from low- and high-income families. The attraction of these strategies is that they are actions that policymakers at the state and federal level can carry out. The limitation is that, in the American context, they have not resulted in consistent improvement in the instruction in high-poverty schools.

We do not intend to imply that funding, accountability, and governance structures are irrelevant to increasing the quality of education provided to American children from low-income families. Indeed, all are essential for making progress toward this goal. However, in the past, the complementary nature of these strategies has received too little attention in policy design, as has the need to remain focused on improving the quality, coherence, and consistency of instruction.

Building Blocks for an American Solution

It is easy to dwell on the characteristics of American education that make constructive change difficult. However, there are also strengths to build on. Of particular importance are educational interventions conducted at considerable scale in which rigorous evaluations show impacts on the skills of a substantial number of low-income children. In *Restoring Opportunity*, we feature three such programs—the Boston pre-K program, the campuses of the University of Chicago charter school, and New York City's small high schools of choice. These innovative, quite durable programs provide existence proofs that it is possible to improve the education of substantial numbers of low-income children.

All three of the interventions we highlight have been evaluated using cutting-edge methods. Christina Weiland and Hirokazu Yoshikawa (2013) use a regression-discontinuity strategy to compare the skills of children who, as a result of their birth dates, were just eligible or not eligible to participate in the Boston pre-K program. They find that the mathematics, literacy, and language skills of children who participated in the pre-K program were considerably more advanced than those of similarly-aged children who spent the year in other child-care settings. The size of the pre-K impacts was enough to close more than half of the gap at kindergarten entry between the academic skills of children from low-income families and those from relatively affluent ones.

A research team led by the sociologist Stephen Raudenbush conducted an evaluation of the impact of enrollment in a University of Chicago charter school campus on children's academic skills. The team found significantly higher average reading and mathematics scores for children who had enrolled in a University of Chicago charter school campus after winning an admissions lottery than for children who had lost the same lottery and subsequently enrolled in another public school. In both reading and mathematics achievement, the difference was thirty-six points on an SAT-type scoring scale, or about 40 percent of the

overall gap between African-American and white children in the Chicago (Hassrick, Raudenbush, and Rosen, forthcoming).

MDRC, a research organization based in New York City, conducted an evaluation of the impact on students' educational attainments of enrollment in one of 123 New York City small high schools of choice that opened between 2002 and 2006. These schools were located in low-income neighborhoods of the city and served primarily educationally and economically disadvantaged students of color. The evaluation compared the educational outcomes of students who won and lost lotteries for entry to particular small high schools of choice. Of particular importance, the research team followed the students long enough to examine college enrollment patterns. It found that enrollment in a small high school of choice increased the probability of high school graduation by 9.5 percentage points (Bloom and Unterman 2012). It also found that enrollment in a small high school of choice boosted college enrollment by 8.4 percentage points (Unterman 2014). These gains represent about one-quarter of the gaps in high school graduation and college enrollment rates between children from low- and higher-income families. Operating independently of MDRC, a group of researchers from Duke and MIT conducted an evaluation of the NYC small schools of choice and reported strikingly similar impacts on high school graduation and college enrollment rates (Abdulkadiroğlu, Hu, and Pathak 2013).

These programs provide truly exceptional quality of education to the low-income children they serve. Importantly, they also share key characteristics that can help guide thinking about the broader changes needed to improve the education of a much greater number of low-income children. The characteristics include making use of *advances in knowledge* about the components of good pre-K, elementary school, and high school education; strong, sustained *school supports*; *sensible accountability*; and embrace of the quite demanding academic standards that are embodied in the Common Core State Standards. Together, these constitute the building blocks needed to bring about genuine improvement in the life chances of low-income children. We consider these in turn.

Advances in Knowledge

Increased understanding of the nature of children's and adolescents' cognitive and socioemotional development, of effective ways to make use of student assessment results, and of the design of effective professional development have expanded the knowledge available to educators about how to serve children well. For example, the designers of the Boston pre-K program made use of recent research on key elements of children's language, mathematics, and socioemotional skills in selecting curricula that allowed children to develop these skills through hands-on exploration and group interactions. Indeed, Boston was able to take advantage of lessons learned from the rigorous evaluations of a growing number of preschool curricula that have been supported by funding from several federal government agencies and private foundations.

The principals of the University of Chicago Charter School campuses were aware of research showing that a lack of vocabulary and background knowledge prevents many low-income children from comprehending texts in core subject areas such as science and social studies. This led them to adopt curricula and pedagogical strategies aimed at building children's knowledge and vocabulary from the start of kindergarten. They also took advantage of recent research on effective strategies for using student assessment results to track the progress of individual children and to guide instructional design. They also made use of research showing that effective professional development is a process, not an event; that it focuses on methods for teaching particular skills; that observing effective instruction should be part of the learning process; and that it is important for novices to observe effective instruction and receive detailed feedback on the strengths and weaknesses of their own teaching.

In preparing ninth graders to do high school work, the faculties of many of the New York small high schools took advantage of knowledge that the skills needed for science literacy are different from those needed for lit-

eracy in social studies. As a result, developing literacy skills was a critical element of the work of all faculty members, not just English teachers. The faculties of the small high schools we highlight also knew about the research on *summer melt*, the phenomenon that many low-income students graduate from high school intending to enroll in college the next fall, but do not follow through because of the complexity of the financial aid application process and fear of the unknown (Castleman and Page 2014). As a result, the schools developed strategies to support recent graduates during the period of transition to college.

Which of the elements of the interventions we highlight are most critical to their success? Unfortunately, we cannot answer this question because the design of the intervention among participating schools incorporated no planned variation. However, our intuition, as informed by the work of Roland Fryer, is that interaction effects are strong. For example, careful analysis of student assessment results would not result in improved student achievement without a long-enough school day to provide adequate time for remediation. A well-developed code for student behavior would not have produced the positive culture all the schools enjoyed without the time teachers spent in collaboratively working out a common way to implement the code. This interpretation is consistent with the positive results Fryer obtained when he convinced a set of conventional public schools in Houston, Texas, to adopt a set of practices that effective charter schools used. These practices included increased instructional time, more effective teachers and administrators, high-dosage tutoring, data-driven instruction, and a culture of high expectations (Fryer 2014). It seems highly unlikely that it would be possible to retain a culture of high expectations without the time and resources to build students' skills.

Supports and Support Organizations

Preparing large numbers of low-income children to meet demanding academic standards is extremely difficult work. Most schools serving low-income students lack the human resources and the knowledge to do it successfully without strong, sustained supports. Commonly needed supports include technical expertise and resources for developing curricula, planning and implementing effective professional development, dealing with emotionally troubled children, and learning to use student assessment results to guide instructional improvement. But even these supports are not enough.

The experiences of high-poverty schools that have made progress in educating low-income children—like many of those profiled in *Restoring Opportunity*—show that it takes more than simply providing good instruction for six hours per day (Dobbie and Fryer 2011). Typically, the school day starts early in these schools, usually with breakfast for the children. It continues until late in the afternoon, providing time for remediation of lagging skills and engagement in enrichment activities. Many of these schools offer instruction on Saturdays and well into the summer months. Unlike typical afterschool and summer programs that do not improve student outcomes because they are disconnected from the core instructional program, the extended-day and extended-year programs in effective high-poverty schools are well-integrated parts of a coherent strategy to continually build children's skills. Another benefit of such a comprehensive approach to schooling is that the school becomes the center of children's daily experiences, which reduces their exposure to the lures and dangers of the neighborhood. The argument that schools can, on a sustained basis, significantly improve life chances for large numbers of low-income children requires this broad definition of schooling. Implementing this broad and deep vision of schooling requires significant expertise and a variety of resources that most high-poverty schools lack.

The schools participating in the effective interventions we highlight had consistent access to strong school supports. In one case, they came from a district central office Department of Early Childhood Education; in a second, from a charter management organization; in a third, from nonprofit organizations that New York City schools contracted with to provide needed services.

Providing high-quality education on a consistent, long-term basis to low-income children

requires institutions that provide consistently strong supports of the same high quality as those afforded to the schools participating in the effective programs we highlighted. The United States has not developed a network of institutions that do this effectively. A promising recent trend, however, is the growing number of organizations that offer supports to public schools. Some, such as the New York Leadership Academy and New Leaders for New Schools, prepare principals to create schools that are effective learning communities for both teachers and students. Others, such as the Boston Teachers Residency Program, recruit academically talented college graduates and support their work in high-poverty schools. Still others—such as New Visions for Public Schools, the Urban Assembly, and many charter management organizations—recruit leadership teams to start new schools and provide ongoing support for those teams. And then there are the comprehensive school reform design organizations such as Success for All and America's Choice that offer detailed guidance and tools to large numbers of high-poverty schools. The challenge is to devise organizational structures that provide high-poverty schools with the resources, knowledge, and freedom to choose the collection of supports they need, with the goal of increasing the coherence and quality of students' daily experiences.

Accountability

Over the last twenty years, it has come to be almost universally accepted that schools should be judged by their effectiveness in educating all students—an enormously important change in thinking. A well-designed accountability system promotes a willingness to use resources in new ways and encourages school faculties to work together to develop the skills of every student.

Our observations, research reviews, and interviews with leaders at the North Kenwood/Oakland (NKO) campus in Chicago and the Urban Assembly School for Law and Justice (SLJ) in Brooklyn revealed a strikingly consistent explanation for their success: strong supports and internal accountability pervade teachers' work lives (Duncan and Murnane 2014).[7]

Carrie Walsh, director of NKO, uses every opportunity to develop teachers' skills, including teacher evaluations. She videotapes and transcribes teachers' lessons, and points out particular areas where improvement is needed. "It could be something as simple as . . . you're just calling on boys all the time and girls actually are hesitant about raising their hand in your class."

Part of SLJ Principal Suzette Dyer's effort to be accountable to the teachers in her school is that she and her leadership team "sit together weekly and create the protocols that we want grade teams and departments to use when they're talking about student work, when they're talking about lesson plans, when they're thinking about end-of-the-year outcomes."

To help reduce the isolation that many teachers experience, both schools work at creating a culture in which accepting and offering criticism is a normal and positive part of a teacher's job. Tanika Island, chief academic officer for NKO, acknowledges that no one wants to hear that something they have put a lot of effort into is not quite right. "You have to train teacher leaders and teachers to be open-minded, to be willing to take feedback, and that takes time," she said. "You have to practice doing that together. And you have to model [that] for teachers."

As the mounting evidence on the weak effects of No Child Left Behind illustrates, it is extraordinarily difficult to design accountability systems that take into account the intense challenges of educating high concentrations of low-income children (Dee and Jacob 2011). Without downplaying the immense challenge of getting accountability right, it is important to remember the value of judging schools by their effectiveness in educating the students they serve rather than by their adherence to rules regarding the uses of resources. A litmus test of the promise of particular accountability systems is the extent to which they provide incentives for skilled teachers to work together in high-poverty schools.

Sensible accountability and sustained

7. Transcripts and videos describing their work are available at http://restoringopportunity.com/.

school supports are critical complements for improving schools, especially those serving high concentrations of low-income children. Accountability without supports does not do the job because most educators are already using the skills and energies they have to educate children. They need the supports that will allow them to be more successful. Supports without accountability do not work because most adults do not change their behaviors readily. Sensible accountability provides the push to embrace the opportunities provided by strong school supports and to redesign schools to make instruction more consistent and coherent and of higher quality.

Common Core State Standards

The Common Core Standards outline the skills in English language arts and mathematics that American students are expected to master at each grade level from kindergarten through twelfth grade. As of this writing, forty-five of the country's fifty states have adopted these standards, which set goals that are considerably higher than the accomplishments of most American students, especially those from low-income families.

Creating the Common Core Standards in English language arts and mathematics is an important step in preparing American students to thrive in a rapidly changing economy and society. Carefully designed to reflect the latest research, the standards can offer teachers and school leaders a fundamental school support: clarity about the conceptual and procedural skills children should master in each grade. And the assessments that two consortia of states are developing to measure students' mastery of the Common Core Standards can provide another critical school support: detailed information for teachers about children's mastery of essential skills and knowledge. These are remarkable accomplishments, reflecting a level of rigor and a degree of cooperation among states that few observers of American education would have thought possible thirty years ago.

Of course, common standards and high-quality assessments alone do not produce better teaching, nor do they enhance student learning. Indeed, the Common Core State Standards are only an early step down a long path leading to better education for all American children. Yet clarity about the specific skills students should master at each grade level makes it possible to improve teacher training programs and on-the-job professional development. The standards can also facilitate the development of curricula and assessments that are closely aligned with their content. Better teacher preparation and better curricula are essential elements for improving teaching and learning.

Support for the Common Core Standards is widespread but fragile. One reason for the fragility is that the introduction of student assessments aligned with the Common Core are starting to show that a great many students, especially those from low-income families, have not met the new standards.[8] We caution against letting high-stakes accountability get ahead of the difficult work of providing educators in high-poverty schools with the knowledge and extensive school supports they will need to help their students master the Common Core Standards. Only if consistent, strong supports are in place can accountability improve the education of low-income children. In other words, strong supports and well-designed accountability are essential comple-

8. Some of the resistance to the Common Core stems from the aggressive manner in which the Department of Education made adoption of the national standards a de facto condition for receiving some federal education funds states desperately needed in the midst of the Great Recession. The accompanying requirement that states implement teacher evaluation systems that incorporate students' test scores also weakened support for the Common Core among teachers. As the politics leading up to the 2016 U.S. elections intensify, some states are retreating from the Common Core Standards and assessments. However, several state legislatures that recently voted to withdraw their commitment to the Common Core, including Alaska, Florida, and Indiana, then adopted educational standards that are virtually identical to the Common Core Standards. Educators and politicians in these states seem to think that the content of the standards makes sense, even if association with the name Common Core does not.

ments, not substitutes. Moreover, accountability that improves education in high-poverty schools must encourage and not undercut the shared work that allowed the schools we highlight to serve low-income students much more effectively than most high-poverty schools do.

Meeting the Challenge

Relying on the heroic efforts of charismatic leaders who create schools that "beat the odds" will not solve the nation's most pressing education problem. These leaders produce results by devoting vast amounts of time to recruiting teachers who share their vision and are willing to work long hours creating curricula, offering extra instruction, and providing emotional support to students from troubled homes. The efforts of such educators are laudable and are the subjects of many heartwarming media stories. However, all too often, the successes of such schools are short lived, because leaders move on and teachers burn out (Harris 2007). Meeting the educational needs of low-income students must be done by creating the conditions for systems of effective schools rather than by relying on exceptions. Reasons why the central offices of public school districts, particularly those in big cities, do not provide schools with the combination of sustained supports and sensible accountability necessary for success are numerous. They include conflicting priorities of schoolboard members and other civic leaders, brief tenures of district superintendents, and bureaucracies with many noncoordinating silos. Changing this situation is a necessary condition for improving urban education.

Is it possible to improve the life chances of children from low-income families in a country in which inequality in family incomes is so large? Compelling evidence that it is comes from a comparison of educational outcomes for children from low- and higher-socioeconomic status families in four countries that have a common language and heritage, the United Kingdom, Australia, Canada, and the United States. Inequality increased in all these countries, but more so in the United States than elsewhere, and the levels of inequality remain lower in Canada and Australia than in the United States and the UK (OECD 2011). Bruce Bradbury and his colleagues (2015) show that the gap in educational outcomes between children from low- and higher-socioeconomic status families is much smaller in the UK, Australia, and Canada than it is in the United States, and that this stems to a large extent from differences in public policies toward families and schools.

The Boston Pre-K program, the University of Chicago charter school campuses, and the New York City small schools of choice provide evidence from the United States that it is possible to close income-based gaps in educational outcomes. All of these interventions created the conditions for networks of schools to educate low-income children and adolescents well. They share characteristics that could inform the design of other successful networks. However, at this time most high-poverty schools do not operate in environments that provide the combination of sustained supports and sensible accountability necessary for success.

Evidence from Montgomery County, Maryland; Long Beach, California; and Aldine, Texas, also shows that it is possible at considerable scale to improve educational outcomes for children from low-income families (see Childress, Doyle, and Thomas 2009; Childress, Grossman, and King 2011; Austin et al. 2006). So does evidence from Achievement First, an effective network of charter schools, which provides an alternative model for supporting schools and holding them accountable (see Education Resource Strategies 2013). It is not clear at this point which model or combination of models holds the most promise. However, it is clear that developing systems of supports and accountability is a necessary condition for improving the education of low-income students.

We want to be clear about the implications of our research for school funding levels. Evidence is ample that simply spending more money will not produce better education. Indeed, in many schools and districts, money can be used much more effectively. However, in many schools serving large numbers of disadvantaged children, implementing the effective strategies we describe in *Restoring Opportunity* will cost more money. These expenditures, appropriately targeted and carefully assessed,

represent an essential investment in the nation's future.

Evidence that adequate funding is a key element of systemic improvement comes from Massachusetts, where a quite stringent accountability system was accompanied by more than $2 billion in increased state funding for education. One result has been dramatic improvement in the mathematics and reading scores of Massachusetts students on the National Assessment of Educational Progress and on international test score comparisons. Another is a 20 percent decline in the gap in four-year graduation rates between Massachusetts students from low- and higher-income families (Papay, Murnane, and Willett 2015).[9]

Can schools make a meaningful contribution to alleviating the growing inequality in educational outcomes between children from low- and high-income families? The answer will have a profound impact on the nation's future. The answer depends on the nation's commitment to supporting a broad and comprehensive definition of schooling, its recognition of the immense challenges high-poverty schools face, and its willingness to find ways to provide the consistently strong school supports and well-designed accountability necessary for lasting success.

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