Center on
Children and Families
at BROOKINGS

July 2014 CCF Brief # 54

How Much Could We Improve Children's Life Chances by Intervening Early and Often?

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Revised March 2015.
This brief is an update of an earlier paper by Kerry Searle Grannis and Isabel Sawhill, originally published in October 2013, "Improving Children's Life Chances: Results from the Social Genome Model."

Summary

Children born into low-income families face barriers to success in each stage of life from birth to age 40. Using data on a representative group of American children and a life cycle model to track their progress from the earliest years through school and beyond, we show that well-evaluated targeted interventions can close over 70 percent of the gap between more and less advantaged children in the proportion who end up middle class by middle age. These interventions can also greatly improve social mobility and enhance the lifetime incomes of less advantaged children. The children's enhanced incomes are roughly 10 times greater than the costs of the programs, suggesting that once the higher taxes and reduced benefits likely to accompany these higher incomes are taken into account, they would have a positive ratio of benefits to costs for the taxpayer. The biggest challenge is taking these programs to scale without diluting their effectiveness.

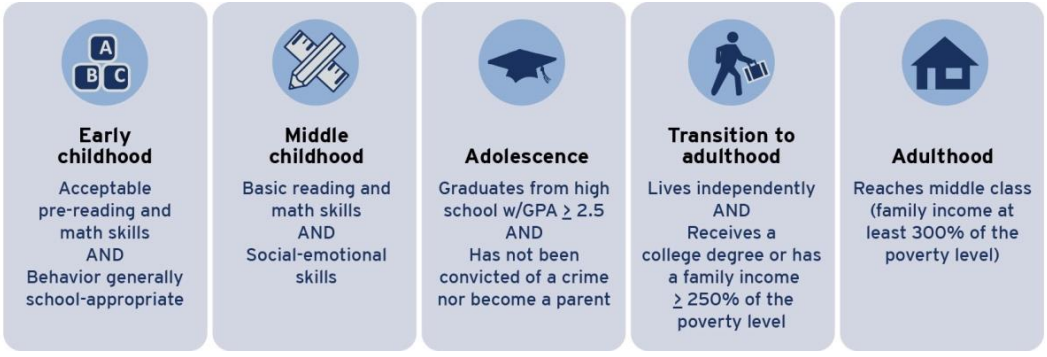
Disadvantage at Birth Persists Throughout Lifecycle

There's ample evidence that children born to poorer families do not succeed at the same rates as children born to the middle class. On average, low-income children trail their more affluent peers on almost every cognitive, behavioral, emotional, and health measure. These gaps start early and persist throughout childhood and into adulthood. What's more, the trend has been worsening over time: despite improvements in closing gender and race gaps over the last half century, the difference between average outcomes by socio-economic status has widened for test scores, college enrollment rates, and family formation patterns.

Our own research delves into the determinants of these widening gaps by looking at the life trajectories of more and less advantaged children. At the Brookings Institution, we have developed a framework for measuring children's life chances, called the Social Genome Model (SGM).[1] The SGM combines real-world data with sophisticated simulation techniques in order to track the academic, social, and economic experiences of individuals from birth through middle age. Using the model, we hope to identify the most important paths to upward mobility.

The SGM divides the life cycle into five stages and specifies a set of outcomes for each stage that, according to the literature, are predictive of later outcomes and eventual economic success. These outcomes were chosen not only for their predictive power, but also because they reflect widely-held norms of success for each life stage (Figure 1).

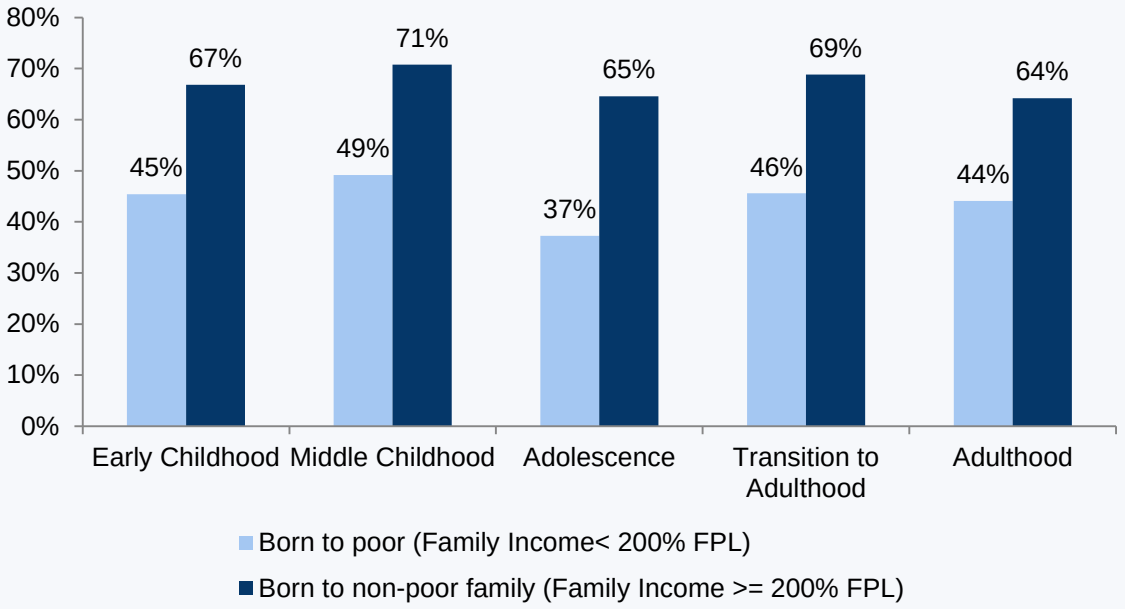
Figure 1. Definitions of Success at Each Life Stage of the Social Genome Model



[1] The Social Genome Model, originally developed at the Brookings Institution and based at the Urban Institute, is a collaborative effort of the Brookings Institution, Child Trends, and the Urban Institute.

At each stage in the life cycle, low-income children succeed at much lower rates than their more advantaged peers (Figure 2).

Figure 2. Success Rates at Each Life Stage, by Family Income



These gaps, however, are not immutable. Results from the SGM show that success at each stage of life greatly enhances the chances of success at the next stage. For example, a child who is ready for school at age five is nearly twice as likely as one who is not to complete middle school with strong academic and social skills. These findings underscore the cumulative nature of skill development and support the idea that earlier interventions in the life cycle are likely to be more effective than later ones for promoting opportunity among the disadvantaged.

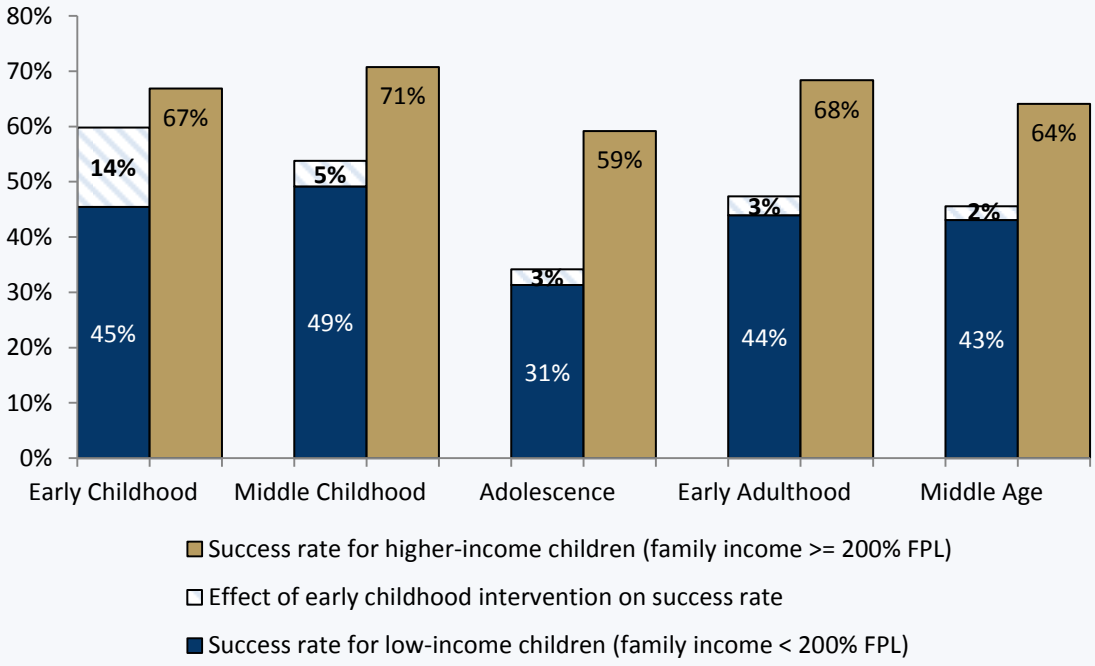
The Impact of Early Intervention

Using the SGM, we can ask what the world might look like if we could successfully eliminate the income-based gap in early childhood. In this “what-if” experiment, we simulate what would happen if we improved the average chances of school readiness at age five for low-income children so they matched the levels of higher-income children.

The good news is that there’s evidence that existing programs have a chance of closing much of the gap in school readiness. A meta-analysis of rigorously evaluated preschool programs found a range of effects on children’s cognitive and behavioral outcomes. When we use average effect sizes to simulate the long-term impact of providing high quality preschool, we see low-income children’s early childhood success rate rise to nearly the levels of higher-income children (Figure 3).

The less encouraging news is that, under such a scenario, the impact fades over time. The gap that was nearly closed at age five reopens by the end of elementary school, and then continues to widen, with only a modest impact on the chances that a child will reach the middle class by middle age.

Figure 3. Success Rates by Income at Birth, After Implementing Universal Preschool Program for Low-Income Children



Multiple Interventions for Larger, Longer-Lasting Effects

It seems clear that early childhood intervention alone is not enough to improve outcomes for adults at middle age. If we want to see larger and longer lasting effects on adult outcomes, we may have to combine early childhood initiatives with interventions in elementary school, adolescence, and beyond. To test the impact of this multi-stage intervention strategy, we simulated the combined effects of programs with strong empirical track records of improving outcomes for lower-income participants (Table 1). We assume the programs are targeted on children living in families with incomes below 200 percent of the poverty line.

In early childhood, we chose to model the effects of the Home Instruction for Parents of Preschool Youngsters (HIPPY) program, one of seven parenting programs identified by the Department of Human and Health Services (DHHS) as an evidence-based model. Offered to lower-income families with children ages 3 to 5, HIPPY seeks to effectively train parents to be their child's first teacher, and rigorous evaluations of the HIPPY model in New York found that the program significantly improved child reading scores. With parenting skills strengthened, we then assume that these children go on to attend high quality preschools, using mid-point estimates of preschool's impact on cognitive and behavioral measures.

Following the completion of preschool, we assume that children will attend elementary schools that offer effective reading programs, such as Success for All (SFA). SFA is a school-wide reform program, primarily for high-poverty elementary schools, that focuses on early detection and prevention of reading problems. The model has undergone thorough evaluation, and SFA was recently awarded a Scale-Up grant through the Obama administration's Investment in Innovation (i3) initiative.

In addition to SFA, we also simulate the impact of a strong Social Emotional Learning (SEL) program. SEL programs include a broad range of interventions that approach teaching and learning as more than a purely academic endeavor, but rather as something that engages

behavioral and emotional competencies. There is growing evidence that SEL programs improve both behavioral and academic outcomes, and an SEL proposal was ranked as one of the highest-rated i3 development applications in 2013.

Finally, in adolescence, we intervene again and assume that the children attend high schools that have benefited from the Talent Development (TD) initiative. The TD model is a comprehensive high school reform program that targets schools with high student dropout rates. Rigorous programmatic evaluations conducted by MDRC have shown promising effects on high school reading and math test scores, and a version of the TD model was awarded an i3 validation grant in 2010.

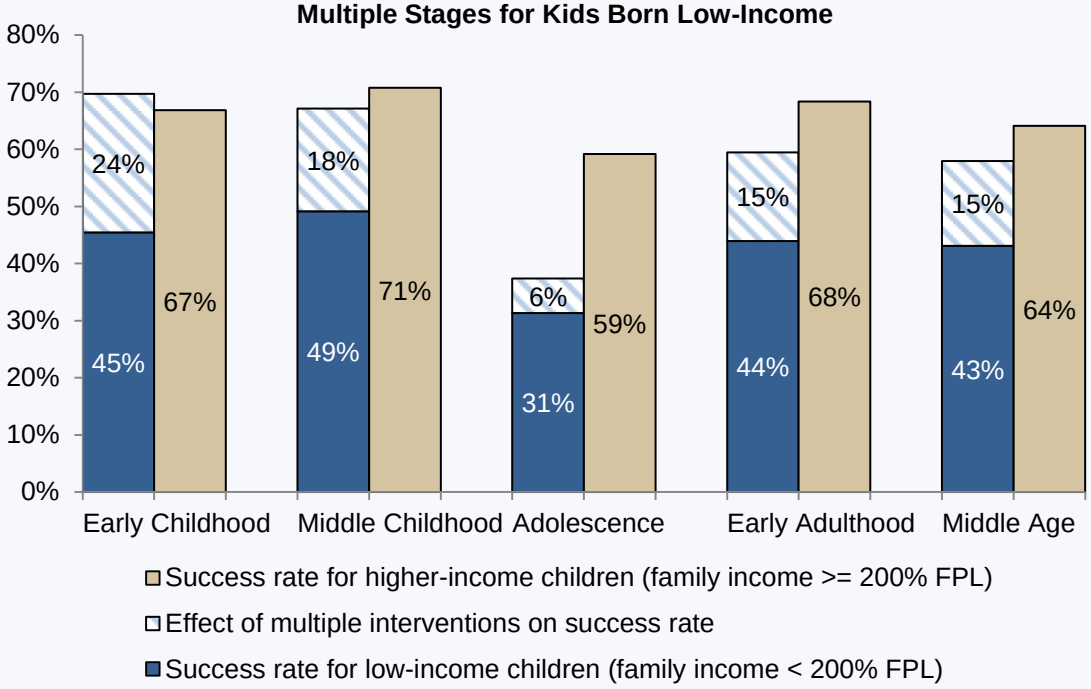
Summary of Post-Birth Interventions					
Life Stage	Intervention Model	Description	Level of Evidence	Adjusted Variable	Effect Size
Early Childhood	Home Instruction for Parents of Preschool Youngsters	Biweekly home visits and group meetings to instruct and equip parents to be effective teachers for their children	Meets the DHHS criteria for an evidence-based program model	Reading	0.75 SD
				Hyperactivity	-0.68 SD
	Preschool	High-quality center-based preschool programs that provide educational services to children directly	Meta-analysis of quasi-experimental and randomized studies of early childhood center-based interventions (Camilli et al., 2010)	Reading	0.45 SD
				Math	0.45 SD
				Antisocial Behavior	-0.20 SD
Middle Childhood	Social Emotional Learning	A broad range of interventions that focus on improving behavioral, emotional, and relational competencies	Highest-rated i3 development application (2013)	Antisocial Behavior	-0.22 SD
	Success for All	A school-wide reform program with a strong emphasis on early detection and prevention of reading problems	Highest-rated i3 scale-up application (2010)	Reading	0.36 SD
				Math	0.27 SD
Adolescence	Talent Development	A comprehensive high school reform initiative aimed at reducing student dropout rates	Highest i3 validation application (2010)	Reading	0.32 SD
				Math	0.65 SD
SGM Target Population: Low-income children (family income < 200% FPL)					

Armed with well-evaluated programs at each stage of childhood, we then simulated how a sustained approach to intervention would impact the gap between lower- and higher-income individuals at each life stage. This multi-stage simulation assumes that intervening at different points in the life course has an additive effect. For example, if an early childhood intervention improves middle childhood reading scores by half a standard deviation, and we then also simulate a middle childhood intervention that improves reading by half a standard deviation, the total increase in middle childhood reading would be one standard deviation. It could be the case, however, that multiple interventions have a synergistic effect, where intervening in early and middle childhood improves middle childhood reading by more than a standard deviation. Alternatively, multiple interventions could hit diminishing returns, meaning that, once we've improved middle childhood reading by a certain amount, additional improvements are harder to induce; in this case the effect on middle childhood reading would be less than a standard

deviation. Without good evidence on which scenario is most realistic, we assume the simplest additive effect.

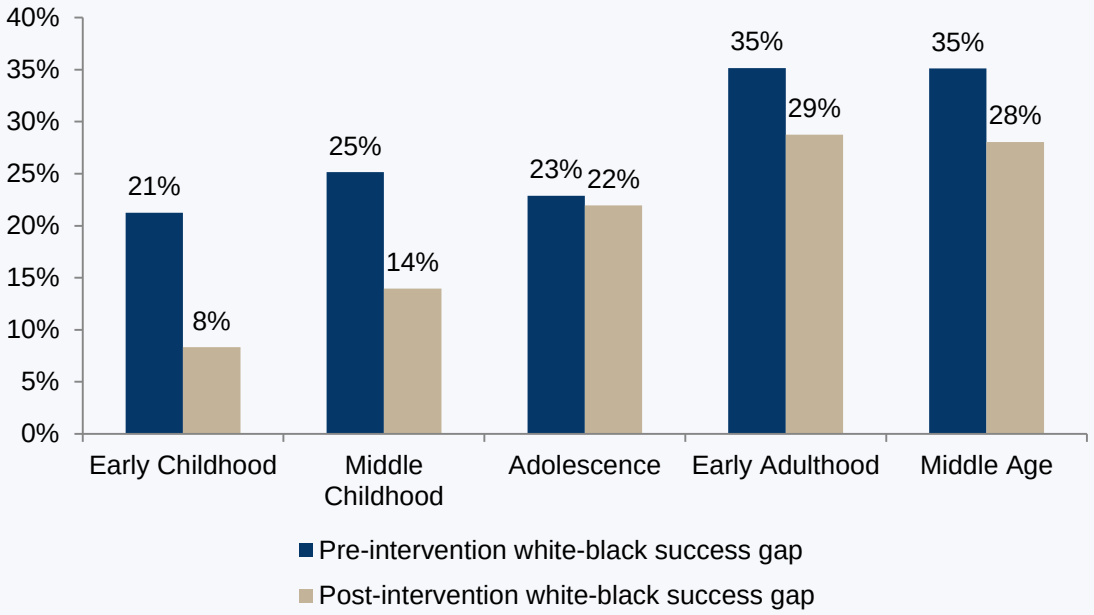
What began as a 20 percentage point gap in those reaching middle class by middle age shrinks to 6 percentage points when intervening in early childhood, middle childhood, and adolescence (Figure 4).

Figure 4. Success Rates by Income at Birth, After Intervention at Multiple Stages for Kids Born Low-Income



When we target this same set of programs on low-income children but then measure the impact on racial gaps in success rates later in life, the results are less dramatic but still encouraging. White-Black gaps in success are narrowed by the multi-stage intervention, although large disparities still persist, especially in adolescence and adulthood (Figure 5).

Figure 5. Percentage Point Gap in White-Black Success Rates After Multi-Stage Intervention

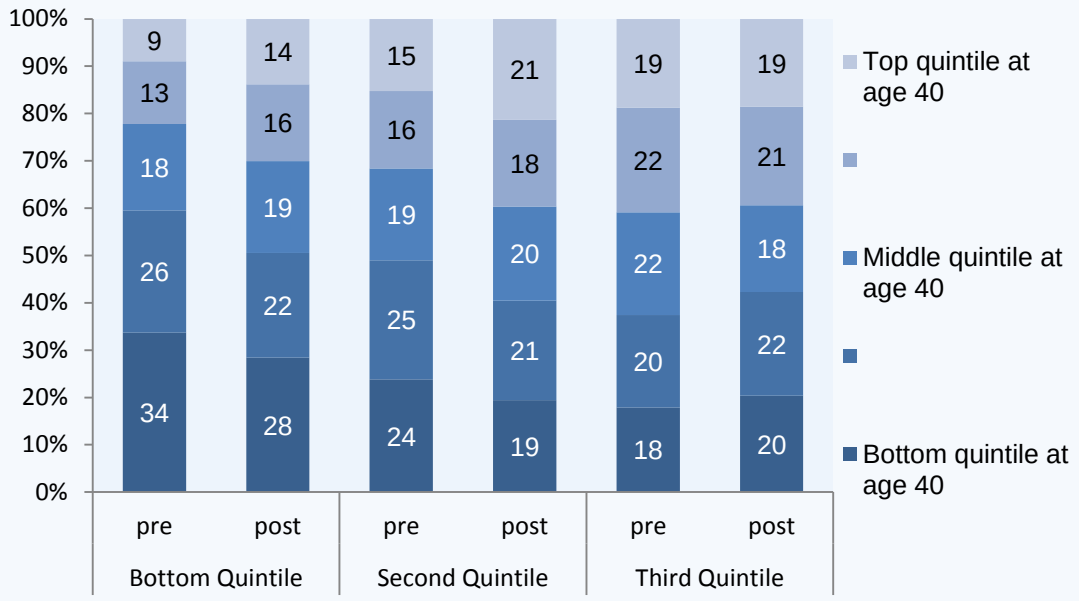


Effects on Social Mobility

Successful implementation of these multiple interventions would substantially increase rates of upward mobility among low-income children (Figure 6).[2] For example, under the baseline scenario, less than one in ten children born into the bottom income quintile climb into the top quintile by age 40; post-intervention, this figure jumps to more than one in seven. In addition, the proportion of low-income children who remain stuck in the bottom quintile drops from 34 to 28 percent.

[2] These results assume that the incomes of children not targeted by the intervention remain the same pre- and post-intervention. This assumption, in turn, implies that non-targeted children's relative mobility falls as a result of the intervention—the improved prospects of targeted children allow some of them to surpass non-targeted children in the income distribution. Note that this may not be a realistic assumption. On the one hand, if the opportunities available in the economy remain unchanged as a result of the intervention, then our assumption will underestimate any changes in relative mobility given that the incomes of many non-targeted children would likely fall, allowing for more upward mobility at the bottom and more downward mobility at the top. On the other hand, if more opportunities become available as a result of the higher productivity of the targeted children, then this need not be a zero-sum game. The upward mobility of targeted children need not come at the expense of non-targeted children because there is more total income to be shared, with the bulk of it being assumed to accrue to targeted children. However, because total income is higher, an adjustment of the quintile breaks is called for, and this adjustment automatically changes the estimated rates of upward and downward mobility for both groups.

Figure 6. Mobility Matrices for Kids Born Low-Income, Pre- and Post-Multiple Interventions



Costs and Benefits

These interventions also appear to pass a simple cost-benefit test. As shown in Table 2, we estimate the total cost per child for all of these programs combined coming in at just over $20,000. The lifetime income of the average individual benefitting from these programs would increase by more than $200,000. While we have not yet analyzed the benefits to taxpayers, these would likely be positive as well, since society would gain from extra taxes paid on the affected individuals' extra income, from savings on benefits those individuals might otherwise receive, and from lower costs for crime, poor health, and related social problems.

Table 2: Summary of Results and Costs

Intervention	Marginal Lifetime Income Effect	Cost per Child
HIPPY (Age 0-3)	$43,371	$3,500
Preschool (Age 3-5)	$45,651	$8,100
SFA and SEL (Age 6-11)	$47,594	$8,100
Talent Development (Age 14-18)	$68,574	$1,400
Total	$205,189	$21,100

Conclusion

Existing evidence-based programs can provide opportunity-enhancing supports at every life stage, and this need not cost more than what we are spending now, at least as measured over a child's life cycle. While we have yet to find a single intervention that will dramatically improve children's life chances, our research suggests that we don't need to wait for one to be invented in order to begin making real progress.

Authors

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