

Pathways

a magazine on poverty, inequality, and social policy

Winter 2011



Does Poverty Get Under the Skin?

THE EFFECTS OF DEPRIVATION ON BLOOD, THE BRAIN, AND THE BODY



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*Lauren Speeth,
founding CEO of the Elfenworks Foundation*

Table of Contents

2 **Editors' Note**

TRENDS

3 **Unanticipated, Unintended, and Unadvised: The Effects of Public Policy on Unauthorized Immigration**

The pitched debates about immigration law have focused our attention on what immigration law should do rather than what it actually does. TOMÁS R. JIMÉNEZ and LAURA LÓPEZ-SANDERS take a dispassionate look at the sometimes perverse and unintended effects of U.S. immigration policy in recent decades.

RESEARCH IN BRIEF

8 LUCAS MANFIELD AND CHRISTOPHER WIMER

New research on whether minimum wage jobs lure high school students to drop out; how prisoners rack up surprising amounts of debt behind bars; a rigorous assessment of long-term trends in economic insecurity; and other cutting-edge research.

HOW POVERTY GETS UNDER THE SKIN: THE EFFECTS OF DEPRIVATION ON BLOOD, THE BRAIN, AND THE BODY

10 **Building a Foundation for Prosperity on the Science of Early Childhood Development**

JACK SHONKOFF describes how poverty really does get under the skin, how it harms the cognitive development of children exposed to it, and what we can do to break this entrenched cycle.

16 **Stressing Out the Poor: Chronic Physiological Stress and the Income-Achievement Gap**

GARY W. EVANS, JEANNE BROOKS-GUNN, and PAMELA KATO KLEBANOV develop a new “chain model” that focuses on the chaotic environment that childhood poverty creates, how that chaos generates stress and cognitive dysfunction, and how such dysfunction in turn leads to academic underachievement.

22 **The Long Reach of Early Childhood Poverty**

GREG J. DUNCAN and KATHERINE MAGNUSON argue that we can combat the effects of poverty-induced stress by providing income support to vulnerable families with young children.

INTERVENTIONS

28 **The Big Why: A Learning Agenda for the Scale-Up Movement**

The longstanding view among politicians is that we should first find out what works to reduce poverty and then “scale it up.” But ROBERT C. GRANGER upends this conventional wisdom by suggesting that we’d best figure out *why* and *under what conditions* a policy works before blindly adopting it everywhere.

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Editors' Note

It's often argued that children today are growing up in a hypercompetitive world with new pressures not just to get good grades and stellar test scores but also to make the varsity basketball team, play in the school orchestra, and form a new school club on the side. This frequently rehearsed version of the "overstressed childhood" narrative is, however, very much a middle-class lament that fails to appreciate that there's stress and then there's *stress*. As tough as the middle-class gauntlet may be, the available evidence suggests that growing up in contemporary poverty-stricken families takes stress to yet higher levels, entailing frequent exposure to such stress-generating events as neighborhood violence, divorce and family chaos, health and mental health problems, residential and job mobility, and much more.

It's not just that such poverty-induced stress is mentally taxing. If it's experienced early enough in childhood, it can in fact get "under the skin" and change the way in which the body copes with the environment and the way in which the brain develops. These deep, enduring, and sometimes irreversible physiological changes are the very human price of running a high-poverty society.

The purpose of this issue is to lay out the facts and myths behind the developing science of early childhood and stress. Do poverty-stricken children indeed grow up in stress-ridden environments? Does such stress, if experienced early enough, bring about permanent physiological changes? Do these changes in turn lead to poor academic achievement and other competitive disadvantages? And, finally, can social policy play any part in changing such dynamics? The articles presented here answer all of the foregoing questions with a resounding "yes."

We begin with a piece by Jack Shonkoff that describes how an overactivated stress-response system has toxic effects on brain architecture and the body's other organs. In the following article, Gary Evans, Jeanne Brooks-Gunn, and Pamela Kato-Klebanov develop a comprehensive model of the life course of poverty-stricken children, a model in which the toxic stress described by Jack Shonkoff and others is one of the mediating variables accounting for poor academic outcomes. Lastly, Greg Duncan and Katherine Magnuson emphasize that, in light of this new science of early childhood development, we would do well to refashion income support in ways that better target the prenatal and early childhood environment.

It's rare indeed that the science of poverty and achievement speaks so clearly on the matter of how best to spend our antipoverty dollars. Although Republicans and Democrats may differ on how much to spend on antipoverty initiatives, there are seemingly no politics at stake when it comes to spending our scarce antipoverty dollars wisely.

—David Grusky & Christopher Wimer, Senior Editors

UNANTICIPATED, UNINTENDED, AND UNADVISED

THE EFFECTS OF PUBLIC POLICY ON UNAUTHORIZED IMMIGRATION

BY TOMÁS R. JIMÉNEZ AND LAURA LÓPEZ-SANDERS

Arizona's controversial immigration law is emblematic of a new period in American immigration history that features a ramped-up commitment to reduce illegal immigration and to establish a new "illegal class" of those who have already entered the United States. The debate about changes to immigration law is often framed as a moral, ethical, or legal issue, but the facts behind this debate are not well known and are often quite perverse.

There are four such perversities in particular that we stress. First, over the last two decades, the United States has followed policies that, contrary to their intent, have actually increased the size of the unauthorized immigrant population. In spite of the fact that lawmakers devised policies aimed at reducing the number of unauthorized immigrants, the consequences have run contrary to their intended outcome.

Second, there has been a dispersion of the immigrant population into new destinations and regions that is a direct consequence of our immigration policy, not some organic or inevitable development. Although the geographic dispersion of immigrants has a complicated set of implications, not all of which are obviously harmful to immigrants or natives, it is nonetheless

striking that such implications were largely unanticipated and unintended.

Third, the unauthorized status of large numbers of immigrants retards the formation of a well-functioning social, civic, and economic life for immigrants and host communities alike. Fourth, current immigration policies are detrimental to integration across generations. Children of immigrants, whether U.S.-born citizens or unauthorized immigrants themselves, wind up doing less well in school and face almost insurmountable barriers in completing school and successfully finding stable and secure employment. The impact of unauthorized status across generations risks creating an "illegal class" of Americans who are cut off from the American Dream. The realization of that class has profound deleterious consequences for us all.

Unintended Consequence #1: The Growth of the Immigrant Population

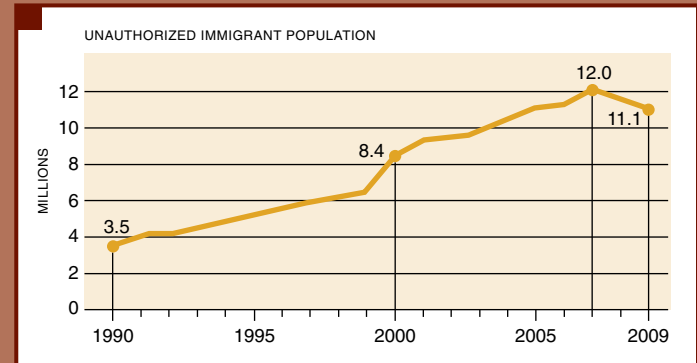
In spite of Herculean efforts to keep out clandestine migrants, U.S. immigration policies have had the unintended consequence of growing the unauthorized population. According to a recent Pew Hispanic Center report, there were an estimated 3.5 million unauthorized immigrants in the United States in 1990, comprising roughly 18 percent of the total foreign-born popula-

tion. By 2007, that number swelled to 12 million, or 30 percent of all foreign-born individuals in the United States (see Figure 1). What is surprising is that this unprecedented growth has taken place even as U.S. immigration policy has focused almost exclusively on stopping clandestine migration at the U.S.–Mexican border. Department of Homeland Security data show that, from 1996 to 2009, the number of U.S. Border Patrol agents grew from 5,878 to 18,319, while line-watch hours more than doubled, and the Border Patrol's annual budget swelled from \$568 million to \$2.7 billion. It was also during this time that the U.S. government began employing the latest in surveillance technology—unmanned watchtowers, seismic sensors, infrared cameras, unmanned aerial drones—and less sophisticated technologies, like fences and stadium lighting.

Our main and most visible policy commitment is to stem the tide through direct monitoring of the border. The simple logic behind this annual expenditure of \$2.7 billion is that we can reduce the population of illegal U.S. immigrants by finding and deterring those who attempt to cross the border illegally. Ironically, the very border fortification designed to stop clandestine migration has had the unintended consequence of spurring growth in the unauthorized population, as the usual revolving door between migration and return migration has now been cut off and generated a new class of permanent stayers north of the border. Increased enforcement has made crossing the border more dangerous because migrants attempt to cross in remote areas of the desert and treacherous waterways in order to avoid detection. Since 1994, more than 5,000 people have died attempting the northward journey, most from environment-

FIGURE 1 Drop in Inflow of Illegal Immigrants

The number of illegal immigrants in the U.S. declined to 11.1 million in March 2009 from a peak of 12 million in March 2007. This marked the first reversal of growth in two decades.



Source: Pew Hispanic Center; Department of Homeland Security

related causes, like dehydration, heat stroke, drowning, and hypothermia. Research conducted by the Center for Comparative Immigration Studies at UC San Diego shows that the dangers of crossing clandestinely all but requires that migrants use smugglers who know the way (and who charge between \$2,500 to \$3,500 per person for these services). Rather than migrants coming to the United States for short periods of time, returning to their country of origin and repeating this migration cycle as they once did, border enforcement has thus led migrants to treat a trip to the United States as a one-way journey. The result is that

U.S.-Mexico border, April 16, 2009



migrants stay put, often send for family and friends, and then build their lives in the United States.

Unintended Consequence #2: Dispersed Immigration

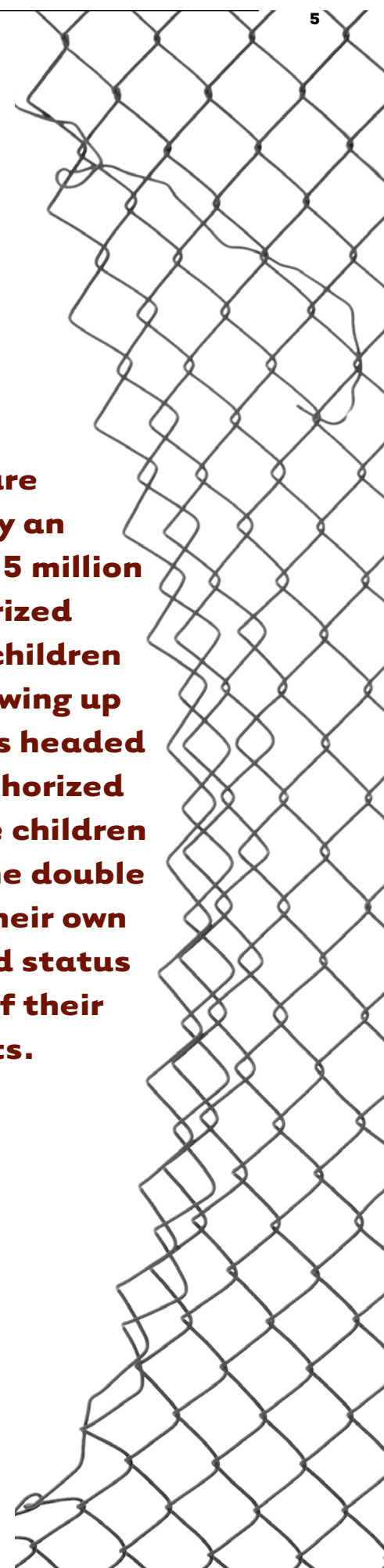
The unauthorized population has also become more dispersed throughout the United States, making immigration a truly national issue. This dispersion of immigrants to new destinations in the South and Midwest arises from a host of causes, including the massive legalization program in 1986, as well as the growing anti-immigrant climate that current policy in part precipitated. As policy spurred the growth of an unauthorized population, while also fanning the flames of an anti-immigrant climate in traditional immigrant destinations, migrants began trying their luck in other destinations across the country, where jobs were more plentiful and sentiment less hostile. Dispersion was also generated by growing labor market competition in traditional receiving destinations and the rising cost of living in those destinations.

Once this diffusion began, it became self-generating. Pioneering migrants quickly established social networks that now channel migrants directly from sending countries to new receiving destinations. In 1990, 66 percent of immigrants lived in the traditional gateway states of New York, California, Texas, Florida, and Illinois, while 34 percent resided in all other states. By 2005, the proportion residing in traditional states shrunk to 60 percent, while 40 percent were living in the nontraditional states. The shift in the dispersion of the foreign born across the United States is most pronounced among Mexican immigrants. Census data show that 87 percent of all Mexican immigrants settled in traditional immigrant states, primarily in California and Texas, in 1990. By 2005, the proportion dropped to 70 percent. Although Mexican immigrants continued to migrate to traditional states, they now form sizable populations in states like Nevada, Washington, Georgia, Colorado, and North Carolina. And as we show below, this also means a diffusion and expansion of problems associated with successfully incorporating these new immigrants.

Unintended Consequence #3: Living in the Shadows

With immigration now a national phenomenon, both immigrants and the various communities in which they settle struggle to find ways to achieve successful integration. It is a common refrain that unauthorized immigrants are “living in the shadows.” The evidence suggests that the ramped-up commitment to enforcing an illegal status casts a long and dark shadow over integration efforts for both newcomer populations and their host communities.

The effect of this ever-present illegal label is nicely revealed through ethnographic research. One of us, López-Sanders, spent more than a year conducting participant observation research and interviews in the Greenville-Spartanburg-Anderson (GSA) region of South Carolina. In documenting the daily experiences of primarily unauthorized immigrants, López-Sanders found



There are currently an estimated 1.5 million unauthorized immigrant children who are growing up in households headed by an unauthorized parent. These children experience the double penalty of their own unauthorized status and that of their parents.



Source: www.flickr.com/photos/voves/138556236/

Chicago Immigration Protest May 1, 2006

that the unauthorized status of immigrants created much distrust, often a palpable fear, of host communities and their institutions. This fear and distrust were part of immigrants' everyday lives. They lived, for example, under the constant threat of factory raids by Immigration and Customs Enforcement, as well as assaults in private and public places that are more frequent than most Americans probably realize. Even the most mundane activities, like leaving the house to run an errand, became anxiety-generating. This anxiety shows up in all manner of small ways. López-Sanders observed, for example, immigrants constantly looking over their shoulders at work or in confined public places. It also shows up in more fundamental ways. Out of fear of being deported, some immigrants locked themselves in their homes and missed out on opportunities, such as attending church or English classes, that could have generated new social ties, assisted them in their jobs, and helped them build an active civic life.

The creation of a starkly defined illegal class cuts two ways. It not only generates fear and distrust among immigrants, but it also encourages harsh treatment of immigrants by natives, especially those in positions of power relative to immigrants. In her interviews with Latino immigrants, López-Sanders found that police response was perceived as slow when crimes were reported against Latinos, whereas police response was rapid and consistent when Latinos were assumed to be the offender rather

than victim. Among the 200 (primarily unauthorized) immigrants López-Sanders interviewed, more than a third reported having been stopped at least once by the police while driving, seemingly without any reason. When López-Sanders accompanied unauthorized immigrants to court to contest driving fines, she observed harried court interpreters urging immigrants, more so than non-immigrants, to "just pay and leave." Likewise, impatient judges asked them to "get to the point" and demanded "less talk." In other settings, such as the Department of Motor Vehicles, health clinics, and even schools, immigrants likewise felt excluded or mistreated rather than assisted.

The tenor of native-immigrant relations appears to have changed fundamentally as a result of September 11 and, to a lesser extent, the immigrant-rights marches of 2006. Before September 11, immigrants reported feeling respected and part of their communities, with many giving examples of buying a house, opening a bank account, or enrolling their children in school without receiving much scrutiny or special attention. After September 11, a fault line appeared. Immigrants felt constantly scrutinized, so much so that many immigrants reported avoiding formal institutions whenever they could. The immigrant marches of 2006, which brought hundreds of immigrants into the streets in South Carolina, ratcheted up anti-immigrant sentiment even more. After those marches, immigrants reported that their immigration status was more frequently challenged in

workplaces and government offices, while Latinos with anglicized last names often had to show proof of citizenship.

Unintended Consequence #4: Holding Back the Second Generation

It is not just the immigrants themselves who were affected by this ramped-up interest in legal status. New evidence shows that their children are also affected, both because their parents are less successfully integrated and cannot easily assist their children, and because the children themselves must focus energy, attention, and effort on assisting their parents. According to a 2007 Merage Foundation report on Los Angeles immigrants, U.S.-born Mexican Americans with unauthorized fathers were 25 percent more likely to drop out of high school, 70 percent less likely to graduate from college, 13 percent less likely to prefer English at home, and had earnings 30 percent lower than those whose fathers became authorized. Another study by UC Irvine sociologists shows that U.S.-born Mexican adults whose parents came without authorization (and remained unauthorized) achieved more than a full year less schooling than those whose parents were authorized.

The number of children affected in this way is significant. According to a recent Pew Hispanic Center report, almost half of all unauthorized immigrant households are couples with children, and the overwhelming majority of their children—73 percent—are U.S. citizens. The number of U.S.-born children with at least one illegal immigrant parent grew to 4 million in 2008 from 2.7 million in 2003, a 48 percent increase. Although these children are U.S. citizens by birth, hence giving them greater opportunity for mobility (as compared to their parents), most will nonetheless suffer setbacks because of their parents' legal status. Sociologists Jody Agius-Vallejo and Jennifer Lee show that Mexican American second-generation professionals devote considerable resources to helping their unauthorized parents cope with the vagaries of healthcare, the job market, and housing.

It is far worse for children of unauthorized immigrants who are themselves unauthorized. There are currently an estimated 1.5 million unauthorized immigrant children who are growing up in households headed by an unauthorized parent. These children experience the double penalty of their own unauthorized status and that of their parents. Federal law allows these children to attend public schools through high school, and an estimated 65,000 graduate from high school each year. Beyond high school, the path to upward mobility is daunting, as only ten states offer in-state tuition to unauthorized immigrant students, and there is little, if any, government financial aid for these students. Without the ability to work legally, and with the full burden of college tuition, it is difficult for this new second generation to experience the success that past second-generation immigrants have achieved. This dead end of mobility translates into a host of negative societal consequences: lost human capital and productivity, a lower tax base, and decreased social

well-being, all of which could have been avoided through more successful and efficient incorporation.

Where Do We Go from Here?

There is good reason to believe that present-day authorized immigrants will, like immigrants of the past, successfully find their way in U.S. society and integrate into America's social, economic, and political life. The same trajectory is less likely for the descendants of the many immigrants, in particular those from Latin America, who have started their march along the path of integration with precarious legal status. They undertake this march under a dark shadow of illegality, and this shadow looms over their children as well. As Congress and the White House consider whether and how to move forward with an overhaul of U.S. immigration laws, they would do well to bear in mind that immigration policy not only determines who is allowed to immigrate and under what circumstances. These laws also inevitably define the terms of reception, especially when those laws create a subordinate illegal class. This label will necessarily affect how incorporation plays out. Because immigration law works mainly to underline an illegal status, our long-standing commitment to successfully incorporating immigrants and their children is facing its harshest challenge yet.

The practical implications of the foregoing are simple. Most obviously, we should pass the DREAM (Development, Relief, and Education for Alien Minors) Act, which would legalize the status of individuals who, at a young age, were brought to the United States without authorization by their parents. Moreover, if we truly want to realize our heritage as an immigrant society, we should further create a pathway to legal status for unauthorized immigrants, an outcome that the majority of Americans want.¹ Yet we appear to be on a path that promotes laws that sharply delineate an illegal class, in spite of evidence showing that these laws only exacerbate the "problem" that they are set up to "solve." Worse yet, the current policy renders incorporation more difficult and less likely, an outcome that serves neither natives nor immigrants. If policies should be evaluated by their consequences, then the case for doing things differently is overwhelming.

Tomás R. Jiménez is Assistant Professor of Sociology at Stanford University. He is the author of Replenished Ethnicity: Mexican Americans, Immigration, and Identity (University of California Press). He has been a fellow at the New America Foundation and an American Sociological Association Congressional Fellow.

Laura López-Sanders is a Ph.D. candidate in sociology at Stanford University. Her dissertation draws on participant observation data that she gathered while working in primarily immigrant jobs and living in immigrant neighborhoods. She is examining Latino integration and its impact on race and ethnic relations in new immigrant destinations.

1. USA Today/Gallup Poll, May 1-2, 2010; GfK Roper Public Affairs and Media Poll, May 7-11, 2010.

The Mythical Allure of the Minimum Wage Job

There's nothing more American than a good debate about the minimum wage. Although opponents of the minimum wage typically emphasize that it reduces the number of jobs, there's another strand of opposition predicated on the view that raising the minimum wage will increase the number of youth dropping out of school. In this story, the higher wage acts as an incentive for students to drop out and join the workforce. But where's the hard evidence to support this claim?

According to research by John Robert Warren and Caitlin Hamrock, it's nowhere to be found. In their state-level analysis of minimum wage data from 1982 to 2005, they find no significant relationship between minimum wage increases and high school completion rates.

The minimum wage plays, at best, only a minor role as a "pull factor" in the decision to drop out of school. The minimum wage debate is not likely to die out soon, but we can at least conclude that high schoolers are hardly clamoring to get their hands on minimum wage jobs.

John Robert Warren and Caitlin Hamrock. 2010. "The Effect of Minimum Wage Rates on High School Completion." *Social Forces*, 88(3), 1379–1392.

The Sickly American Safety Net



During recessions, many people lose their health benefits by virtue of losing their jobs. It stands to reason that their medical care would suffer as a result. But is this conventional wisdom actually the case? And, if so, are recession-induced declines in medical care equally inevitable in all countries?

To explore this question, Annamaria Lusardi, Daniel J. Schneider, and Peter Tufano surveyed people in five countries about their routine medical care usage.

In all countries, those who lost their jobs or lost much of their wealth experienced reductions in medical care, just as one might expect. A comparison among countries, however, reveals striking differences in the extent of this reduction. For example, more than a quarter of all Americans reported a reduction in routine medical care, whereas only 5–12 percent of all Canadians, French, British, or Germans likewise reported a reduction.

Although the recession hit hard on both sides of the Atlantic, its long-term effects on health are likely to be felt much harder in the United States, where a weaker safety net lets much more medical care fall through its cracks.

Annamaria Lusardi, Daniel J. Schneider, and Peter Tufano. 2010. "The Economic Crisis and Medical Care Usage." *National Bureau of Economic Research, Working Paper* 15843.

Debts to Society

It is well known that prisoners in the United States are over-recruited from the lower rungs of the socioeconomic ladder. In turn, the act of going to prison worsens convicts' economic prospects, not just because prisoners cannot easily go to school or gain much work experience while in prison, but also because the stigma of a criminal record makes it difficult for them, once released, to find a job. But now we're learning that there's yet another way that the penal system generates disadvantage. Many felons emerge from the system saddled not only with a criminal record but also with quite substantial debt.

In new research by Alexes Harris, Heather Evans, and Katherine Beckett, fully 80 percent of probationers and 30 percent of those sentenced to jail time are obliged to pay fines or fees. Further, these debts are not easy to shrug off; indeed, it often takes inmates over ten years to pay them after leaving the system. The debts may in some cases be substantial enough to induce former prisoners to return to crime in an attempt to pay them off.

The question that this research raises is whether the long arm of a prison sentence should be quite so long. If we want released prisoners to reenter society as responsible citizens, it may be counterproductive for us to burden them with so much post-release debt.

Alexes Harris, Heather Evans, and Katherine Beckett. 2010. "Drawing Blood from Stones: Legal Debt and Social Inequality in the Contemporary United States." *American Journal of Sociology*, 115(6), 1753–1799.

Insecurity Rising

It's been fashionable of late to argue that Americans are living in an ever riskier and less secure world. Even before the Great Recession hit, the standing claim was that we're living in a "risk society," a society marked by an omnipresent threat of downward mobility because of job loss, uncovered medical costs, and other economic disasters.

Although the rise of such a "risk society" has been much discussed, until now we've lacked rigorous data on actual trends in economic security. Using the Panel Study of Income Dynamics, Jacob Hacker and his colleagues have constructed an "Economic Security Index" to quantify such trends. The index tracks the joint occurrence of three risks to economic well-being: a major loss in income, a major out-of-pocket medical expense, and inadequate wealth to buffer these two risks. If a family's available household income is reduced by at least 25 percent, either through decreases in income or increases in medical spending, they are counted as insecure if they don't have an adequate safety net of liquid financial wealth.

Using this definition, economic insecurity has indeed increased over the last quarter century, and it's likely to have increased even more dramatically in the current recession. According to Hacker and his colleagues, economic insecurity increased by 33 percent from 1985 to 2007, and it may have increased by as much as 50 percent up to the present day (according to the best available projections). Thus, even absent the current great recession, it appears that Americans face an increasingly insecure future.

Jacob S. Hacker, Gregory A. Huber, Philipp Rehm, Mark Schlesinger, and Rob Valletta. 2010. "Economic security at risk: findings from the economic security index." New Haven, CT: Institution for Social and Policy Studies.

The Power of Framing Inequality

There's a long history of research suggesting that minority students who are exposed to negative stereotypes and prejudice will tend to disengage from academics. If the academic game is one that's rigged for failure from the start, then it's hardly surprising that one doesn't want to play it.

But Brian S. Lowery and Daryl A. Wout reason that negative stereotypes might well be reframed to make them less destructive to minority students. Their proposed reframing entailed recasting stereotypes as an advantage for the dominant group rather than a disadvantage for the minority group. It's slightly less irksome, they argue, to miss out on a bonus than to be assessed a penalty. Although it's a seemingly trivial reframing, Lowery and Wout maintain that it might just change the propensity to disengage.

And they appear to be right. When academic inequality was framed, as it typically is, in terms of minority disadvantage, it did lead Black, Latino, and female students to disengage. When, however, the experimenter reversed the framing, presenting the inequality as a dominant-group advantage, minority students remained academically engaged. It's difficult of course to change negative stereotypes, which are famously entrenched and enduring. But the way in which we talk about these stereotypes matters greatly—and can be changed.

Brian S. Lowery and Daryl A. Wout. 2010. "When Inequality Matters: The Effect of Inequality Frames on Academic Engagement." *Journal of Personality and Social Psychology*, 98(6), 956–966.

Redistributing Pedagogical Wealth

Children learn more when they are taught by high-quality teachers. But whom do the best teachers typically teach? Perhaps understandably, the best teachers often want to teach the high-achieving students, with the result that the students most in need are too often left with less able teachers. If, instead, some of our best teachers were teaching in underperforming districts—often those districts that serve poorer and more disadvantaged youth—we could instantly close some of the achievement gap between those youth and their higher-achieving peers.

Could we solve this problem simply by paying teachers a bit more to work in underperforming districts? Research by Jennifer L. Steele, Richard J. Murnane, and John B. Willett reveals that large inducements do in fact change where the good teachers go to teach. Using data from the California's Governor's Teaching Fellowship (GTF), they find that providing a \$20,000 incentive for talented novice teachers to enter underperforming schools increased their probability of teaching in such schools by 28 percentage points. It seems that cash talks.

But did the incentive-receiving teachers take the money and ultimately run? The evidence suggests not; approximately 75 percent of the GTF recipients remained in their underperforming schools for at least four years (a retention rate that's similar to that of non-recipients). Although budget-stressed states aren't likely to jump on the GTF bandwagon in the short term, such results suggest it's an intervention to file away for the future.

Jennifer L. Steele, Richard J. Murnane, and John B. Willett. 2010. "Do Financial Incentives Help Low-Performing Schools Attract and Keep Academically Talented Teachers? Evidence from California." *Journal of Policy Analysis & Management*, 29(3), 451–478.

BUILDING A FOUNDATION *for Prosperity* **ON THE SCIENCE OF** **EARLY CHILDHOOD DEVELOPMENT**

BY JACK P. SHONKOFF, M.D.


Science tells us that early childhood is a time of both great opportunity and considerable risk. For better or worse, its influence can extend over a lifetime. A strong foundation in early childhood lays the groundwork for responsible citizenship, economic prosperity, healthy communities, and successful parenting of the next generation. A weak foundation can seriously undermine the social and economic vitality of the nation.

Dramatic advances in neuroscience, molecular biology, genomics, and the behavioral and social sciences are deepening our understanding of how healthy development happens, how it can be derailed, and what societies can do to keep it on track. We now know, for example, that:

- Genes provide the initial blueprint for building brain architecture
- Environmental influences affect how the neural circuitry actually gets wired
- Reciprocal interactions among genetic predispositions and early experiences affect the extent to which the foundations of learning, behavior, and both physical and mental health will be strong or weak



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For the one in seven U.S. children who experience some form of maltreatment, such as chronic neglect or physical, sexual, or emotional abuse, biological adaptations can lead to increased risk of a compromised immune system, hypertension and heart disease, obesity, substance abuse, and mental illness.

These and other striking discoveries offer provocative insights about the far-reaching influences of early developmental processes that were not appreciated as recently as a decade ago. The challenge for policymakers and civic leaders is to capitalize on this scientific revolution through creative new thinking about a broad range of societal concerns, including education reform, workforce development, health promotion, prevention of disease and disability, child protection, crime reduction, and poverty alleviation.

The foundations of healthy development and the origins of many physical and cognitive impairments are increasingly likely to be found in the biological “memories” that are created by gene-environment interactions in the early years of life, in some cases as early as during the prenatal period. The science explaining these phenomena is grounded in the basic biological principle that the immature organism “reads” salient environmental characteristics in the service of developing its capacity to adapt to the environment in which it “expects” it will live. For example, inadequate maternal nutrition during pregnancy prepares biological systems for a life of scarcity after birth—a life in which the baby must make the most of limited nutrients. This healthy adaptation becomes a liability when the post-natal environment in fact offers plenty of high-caloric nutrition. Hence the result of poor prenatal nutrition can be increased likelihood of obesity in childhood and adulthood, as well as later hypertension and heart disease.

Similarly, when early experiences are nurturing, contingent, stable, and predictable, healthy brain development is promoted and other organ regulatory systems are facilitated. When early experiences are fraught with threat, uncertainty, neglect, or abuse, stress management systems are over-activated. The consequences can include disruptions of developing brain circuitry, as well as the establishment of a short fuse for subsequent stress response activation, which leads to greater vulnerability to a host of physical diseases. As a result of these biological adaptations, stable, responsive, nurturing caregiving early in life is associated with better physical and mental health, fewer behavioral problems, higher educational achievement, more productive employment, and less involvement with social services in adulthood. For the one in seven U.S. children who experience some form of maltreatment, such as chronic neglect or physical, sexual, or emotional abuse, biological adaptations can lead to increased risk of a compromised immune system, hypertension and heart disease, obesity, substance abuse, and mental illness.

Viewing this scientific evidence within a biodevelopmental framework (see Figure 1) points to the particular importance of addressing the needs of our most disadvantaged children at the earliest ages. The domains that comprise this framework provide a roadmap for a new, science-driven era in early childhood policy, starting with three promising targets for innovative intervention strategies, beginning as early as the prenatal period. These three targets determine whether the early years establish the foundations of healthy development or are sources of adversity with lifelong detrimental consequences.

Target #1: Healthy, stable relationships. The first target area—the environment of relationships in which a young child develops—requires attention to a continuum from providing more nurturing, responsive caregiving to protecting children from neglectful or abusive interactions. These relationships include those with family and non-family members, as both are important sources of stable and growth-promoting experiences. Moreover, these relationships can provide critical buffers against potential threats to healthy development.

Target #2: Physical environments. The second target area—the physical, chemical, and built environments in which the child and family live—requires protection from neurotoxic exposures such as lead, mercury, and organophosphate insecticides; safeguards against injury such as the use of infant seat restraints in automobiles and safe play spaces; and the availability of safe neighborhoods and their associated social capital,

both of which improve the prospects of families with young children. When communities provide children with safer and less toxic environments, the architecture of their brains and bodies is more likely to develop in healthy ways, leading to more success and productivity further on down the road.

Target #3: Appropriate nutrition. The third target area for intervention—appropriate versus poor nutrition—requires attention to the availability and affordability of nutritious food; parent knowledge about age-appropriate meal planning for young children; and effective controls against the growing problem of excess caloric consumption and early obesity. As noted earlier, this is not just about providing healthy meal options in school cafeterias. The foundation for healthy nutrition starts as early as the prenatal period, when scarcity and proper maternal nutrition literally lay the groundwork for later health and nutritional status throughout the life course.

Together, experiences in each of these target areas trigger a variety of physiological responses. In some cases, specific adverse events or experiences that occur during sensitive periods in the development of the brain or other organ systems may leave physiological “markers” whose effects are seen later. Lifelong cognitive deficits and physical impairments associated with first-trimester rubella infection or significant prenatal alcohol exposure are two prominent examples. In other circumstances, physiological changes may reflect the cumulative damage or biological “wear and tear” caused by recurrent abuse or chronic neglect over time. This breakdown of the physiological “steady state” is believed to be due to chronic activation of the stress response system. And this breakdown, in turn, gives a much greater sense of urgency to the disproportionate exposure of low-income children to ongoing environmental stressors, traumatic experiences, and family chaos. When early influences are positive, physiological systems are typically healthy and adaptive. When

HOW STRESS AFFECTS BRAIN DEVELOPMENT

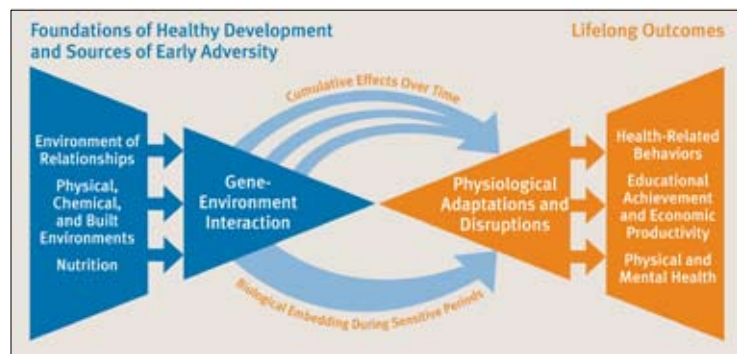
Learning how to cope with adversity is an important part of healthy child development. When we are threatened, our bodies activate a variety of physiological responses to stress. Scientists now know that chronic, unrelenting stress in early childhood, in the absence of supportive relationships with adults, can be toxic to the developing brain.

Positive stress is characterized by moderate, short-lived increases in heart rate, blood pressure, serum glucose, and circulating levels of stress hormones. Precipitants include the challenges of dealing with frustration, adjusting to a new child care setting, and other normative experiences. Positive stress is an important aspect of healthy development that is experienced in the context of stable and supportive relationships that facilitate adaptive responses that restore the stress response system to baseline.

Tolerable stress refers to a physiological state that could potentially disrupt brain architecture but is buffered by supportive relationships that facilitate adaptive coping. Precipitants include the death or serious illness of a family member, parental divorce, homelessness, a natural disaster, or community violence. The defining characteristic of tolerable stress is the support provided by invested adults that helps restore the body’s stress-response systems to baseline, thereby preventing disruptions in brain circuits that could lead to long-term consequences.

Toxic stress refers to strong, frequent, and/or prolonged activation of the body’s stress-response systems in the absence of the buffering protection of stable adult support. Major risk factors include recurrent physical and/or emotional abuse, chronic neglect, severe maternal depression, parental substance abuse, and family violence, with or without the additional burdens of deep poverty. Toxic stress disrupts brain architecture, adversely affects other organs, and leads to stress-management systems that establish relatively lower thresholds for responsiveness that persist throughout life, thereby increasing the risk of stress-related disease or disorder as well as cognitive impairment well into the adult years.

FIGURE 1 How Early Experiences Get into the Body: A Biodevelopmental Framework



Source: Shonkoff, J.P., “Building a New Biodevelopmental Framework to Guide the Future of Early Childhood Policy.” *Child Development*, January/February 2010, Volume 81, Number 1, pp. 357–367.

influences are negative, systems may become dysfunctional. In both cases, genetic predisposition affects whether a child is more or less sensitive to environmental influences. The identification and measurement of both types of physiological “footprints” offer considerable promise for understanding both resilience and vulnerability in the face of adversity.

Physiological responses to early experiences affect adult outcomes such as educational achievement and economic productivity; health-related behaviors like diet, exercise, smoking, alcohol and substance abuse, antisocial behavior, and violent crime; and both the preservation of physical health and the avoidance of disease and disorder. In other words, children who experience positive early environments and experiences tend to go on to complete more school years and have higher-paying jobs, demonstrate more health-promoting lifestyles, and live longer, healthier lives. Children who, early in life, experience adverse conditions such as deep, sustained poverty, profound neglect or abuse, exposure to violence, and parental mental illness or substance abuse tend to drop out of school earlier, earn less, depend more on social supports, adopt a range of unhealthy behaviors, and die at a younger age. And this winds up costing us all more in the end than if we had addressed these problems early on.

From Science to Policy

The proposed biodevelopmental framework presents an integrated approach for addressing the early childhood roots of disparities in learning, behavior, and health. We know more now than ever before about how young children learn and about how to facilitate the development of their competencies in a wide variety of areas. We also have greater insights into how early adversity can produce disruptive physiological effects on the developing brain, cardiovascular system, and immune system, all of which can have lifelong impacts on both educational achievement and health. These rapidly moving scientific frontiers offer unprecedented opportunities to catalyze a new era in early childhood policy and practice guided by science. This science-based future must be driven by leadership that combines a strong sense of civic responsibility, an informed understanding of the positive returns that can be generated by wise investment, and a willingness to explore new ideas.

There is sufficient evidence right now to make the scientific and economic case for investing in innovative, relationship-based interventions for young children burdened by the stresses of child maltreatment, parental mental health impairments, or family violence. Another candidate for intervention is the disruptive impact of emotional and behavioral problems on early learning. The simple provision of rich, center-based learning experiences for young children is not in itself sufficient for preventing developmental lags if their brain circuits are burdened by anxieties and fears that result from adverse life circumstances. These disruptive experiences must be addressed directly. Similarly, it is not sufficient to simply provide information on child development and advice on parenting to mothers and fathers

with low income and limited education if these parents themselves are having considerable difficulty coping with the stresses of poverty, depression, substance abuse, food insecurity, homelessness, and/or neighborhood violence. Only by addressing these problems head-on can we reduce the intergenerational cycle of disadvantage associated with growing up in such environments.

Complementing our knowledge base in the biological and developmental sciences, program evaluation data tell us that we can improve the life trajectories of children who face the burdens of poverty and social disadvantage, but the quality of program implementation and the magnitude of measured impacts are highly variable. This evidence base is amplified by reports from early childhood program staff who see the positive impacts of their efforts on a daily basis, yet are often overwhelmed by the emotional, behavioral, and social problems of many of the children and families they serve. All available information points to the same conclusion—intervention in the early years can make an important difference, but the *magnitude* of policy and program impacts must be increased.

The field of early childhood intervention currently stands at an important crossroads. One path leads toward the vital task of closing the gap between what we know and what we do right now. This road’s directions are clear—it requires enhanced staff development, increased quality improvement, appropriate measures of accountability, and expanded funding to serve more children and families. The second path heads into less charted territory, yet its purpose is deeply compelling—to create the building blocks for a new mindset that promotes innovation, invites experimentation, and leverages the frontiers of both the biological and social sciences into transformational changes in policy and practice. The first path will bring state-of-the-art services to greater numbers of children and families. The second views current best practices as a promising starting point, not a final destination. Both are essential, but taking the first steps down the path toward a new era begins with several key challenges.

Challenge #1: Thinking across silos. The fragmented world of early childhood policy, practice, and research must be guided by a single underlying science of early childhood development. As our understanding of that unified science base has deepened, persistent disconnections among the multiple policy streams that affect young children have become increasingly untenable. Improved outcomes for children facing significant adversity are most likely to be achieved through the coordinated application of an integrated, science-based framework across agencies and sectors, not through continuing attempts to foster improved inter-agency cooperation among disparate systems that are guided by divergent, historical traditions rather than convergent, contemporary knowledge.

Challenge #2: Understanding cultural context. The increasing racial and ethnic diversity of the early childhood population in the United States demands a deep commitment to the critical


task of developing, testing, and continually refining approaches that speak to a broad range of child-rearing beliefs and practices. Acknowledgment of the importance of cultural competence in early childhood policy and programs is common, but scientific investigation of the impact of different child-rearing beliefs and practices on early brain development is nonexistent. Greater understanding of the impact of a diversity of parenting practices on the development of the brain will significantly enhance our capacity to design policies and services that meet the needs of all young children and their families in an increasingly pluralistic society.

Challenge #3: Innovating as well as improving. The growing demand for evidence-based policies and programs is an increasingly powerful force in the early childhood policy arena. The question is not whether decisions about the allocation of resources should be informed by evidence, but whether the current definition of evidence that guides early childhood investments may be too narrow. Randomized experiments remain the gold standard for comparing the efficacy and effectiveness of alternative interventions. Cost-effectiveness and cost-benefit assessments for calculating the monetary returns achieved from interventions also provide useful information about existing services. Neither, however, offers significant guidance for the compelling task of innovation. The challenge is to look beyond the program evaluation literature alone and to leverage well-established and broadly accepted scientific concepts to drive innovation.

Challenge #4: Formulating and testing new theories of change. Early childhood policies and practices are likely to advance best within an open environment that engages a broad diversity of values and expertise, promotes intellectual flexibility and creativity, and encourages a willingness to take risks and learn from failure. This is not meant to minimize the continuing importance of efforts that focus on incremental improvements in the quality of existing programs. It is simply intended to underscore the need for simultaneous investment in new ideas in the search for more effective intervention strategies.

The challenge for informed policymaking is to focus less attention on competing interpretations of program evaluation data that demonstrate statistically significant but relatively modest impacts and to direct more investment toward generating and testing new ideas about how to achieve more dramatic improvements in life outcomes, particularly for those whose needs are not being met. The complementary challenge for the research community is to focus less on fine-tuned measurement of what we already know about children's development and more on the formulation, testing, and continuous refinement of new theories of change about how to reduce significant threats in the early years of life. An exciting new era in early childhood policy, practice, and research lies at the convergence of these two agendas—an era driven by science, creativity, and pragmatic problem-solving in the service of building a more humane present and more promising future for all young children and their families.

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**All available
information
points to the
same conclusion
— intervention in
the early years can
make an important
difference, but
the magnitude of
policy and program
impacts must be
increased.**



BY GARY W. EVANS, JEANNE BROOKS-GUNN,
AND PAMELA KATO KLEBANOV

Stressing Out the Poor

Chronic Physiological Stress and
the Income-Achievement Gap



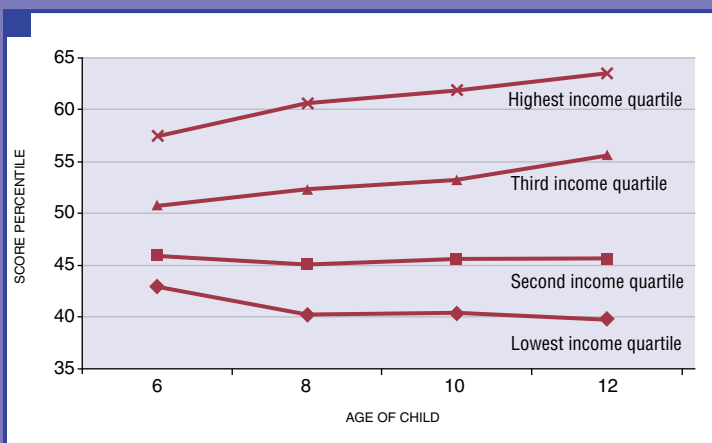
It is well known that economic deprivation early in life sets children on a trajectory toward diminished educational and occupational attainment. But why is early-childhood poverty so harmful? If we can't answer that question well, our reform efforts are reduced to shots in the dark.

In this article, we offer a new perspective on this question. We suggest that childhood poverty is harmful, in part, because it exposes children to stressful environments. Low-income children face a bewildering array of psychosocial and physical demands that place much pressure on their adaptive capacities and appear to be toxic to the developing brain. Although poor children are disadvantaged in other ways, we focus our analysis here on the new, underappreciated pathway depicted in Figure 1. As shown in this figure, children growing up in poverty demonstrate lower academic achievement because of their exposure to a wide variety of risks. These risks, in turn, build upon one another to elevate levels of chronic (and toxic) stress within the body. And this toxic stress directly hinders poor children's academic performance by compromising their ability to develop the kinds of skills necessary to perform well in school.

FIGURE 1 A new pathway to account for the income-achievement gap.



FIGURE 2 Average percentile rank on Peabody Individual Achievement Math.



Source: James J. Heckman (2006). "Skill Formation and the Economics of Investing in Disadvantaged Children." *Science*, 312(5782): 1900-1902.

We will unpack this new Risk–Stress Model in the balance of our article. However, before doing so, it's useful to first go over the evidence regarding the relation between poverty and achievement and then to present some of the well-known pathways through which this relationship is generated. With that background in place, we can then describe the Risk–Stress Model, as represented in Figure 1.

Poverty and Achievement

It is well known that children born into low-income families lag behind their middle- and upper-income counterparts on virtually all indices of achievement. To provide one example, a national study of elementary school children shows that children in the poorest quarter of American households begin kindergarten nearly 10 percent behind their middle-income and affluent classmates in math (Figure 2). Six years later, as they are about to enter middle school, the poorest quarter of American children have fallen even further behind, with the gap between themselves and their most affluent schoolmates nearly doubling.

The splaying pattern revealed here, a general one that holds across various outcomes, may be attributed to the tendency for advantage and disadvantage to accumulate over time. This

accumulation occurs in various ways; for example, children who score poorly at age six may be tracked into low-achievement school groups, which in turn exposes them to lower expectations, to less rigorous curricula, and to less capable peers, all of which further disadvantage them and generate ever more substantial between-group gaps. The Risk–Stress Model, to which we turn later, suggests that such splaying may also be attributed to the cognitive deficits and poorer health that chronic stress generates. Both cognitive deficits and ill health then repeatedly disadvantage poverty-stricken children in one educational setting after another.

Pathway #1: Parenting Practices

What types of forces have social scientists conventionally understood as explaining the achievement gaps illustrated in Figure 2? One reason poor children lag behind their more affluent peers is that their parents interact with them in ways that aren't conducive to achievement. For example, psychologist Kathryn Grant and her colleagues have documented a strong and consistent relation between socioeconomic disadvantage and harsh, unresponsive parenting. In one national dataset, 85 percent of American parents above the poverty line were shown to be responsive, supportive, and encouraging to their children during infancy and toddlerhood, whereas only 75 percent of low-income parents had the same achievement-inducing parenting style. While most low-income parents (i.e., 75 percent) do provide adequate levels of support and encouragement, these data reveal, then, a nontrivial difference across income levels in the chances that children will experience a problematic parenting style. There is considerable evidence that at least a portion of the cognitive developmental consequences of early childhood poverty is due to this difference.

Pathway #2: Cognitive Stimulation

It's also well known that children from low-income households tend to receive less cognitive stimulation and enrichment. For example, a child from a low-income family who enters first grade has been exposed on average to just 25 hours of one-on-one picture book reading, whereas an entering middle-income child has been exposed on average to more than 1,000 hours of such reading. Likewise, during the first three years of life, a child with professional parents will be exposed to three times as many words as a child with parents on welfare.

And it's not just simple parental effects that account for the achievement deficit. If a child is born into a high-income family, he or she may also benefit from high-quality stimulation and enrichment from extended family, from siblings and friends, and from more formal care providers. All of this redounds to the benefit of higher-income children while further handicapping low-income children.

So much for the well-known pathways by which disadvantage is transmitted. We turn now to another and less-appreciated aspect of low-income environments that may also harm cogni-

tive development. The key concern here: Children from impoverished households face a wide array of physical and psychosocial stressors. Their homes, schools, and neighborhoods are much more chaotic than the settings in which middle- and upper-income children grow up. Such conditions can, in turn, produce toxic stress capable of damaging areas of the brain known to underlie cognitive processes—such as attention, memory, and language—that all combine to undergird academic success. In the pages that remain, we document each of the steps in the Risk–Stress Model.

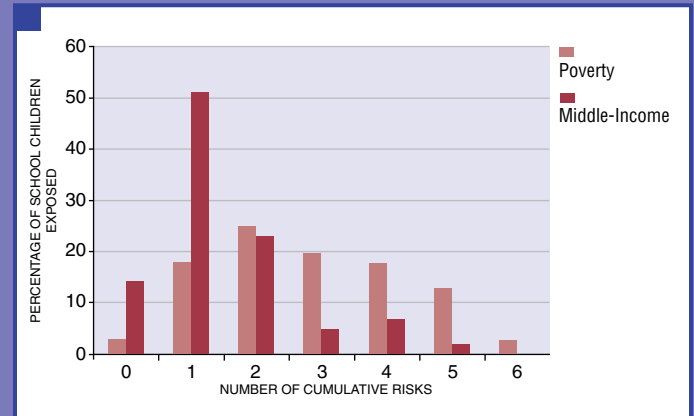
Poverty and Cumulative Risk Exposure

The stressors that poor children face take both a physical and psychosocial form. The physical form is well documented; poor children are exposed to substandard environmental conditions including toxins, hazardous waste, ambient air and water pollution, noise, crowding, poor housing, poorly maintained school buildings, residential turnover, traffic congestion, poor neighborhood sanitation and maintenance, and crime. The psychosocial form is also well documented; poor children experience significantly higher levels of family turmoil, family separation, violence, and significantly lower levels of structure and routine in their daily lives.

An important aspect of early, disadvantaged settings may be exposure to more than one risk factor at a time. A powerful way to capture exposure to such multiple sources of stress and strain is the construct of cumulative risk. Although there are various ways to quantify cumulative risk, one common approach is to simply count the number of physical or psychosocial risks to which a child has been exposed. In one UK study, the authors counted how often children were exposed to such stresses as (a) living with a single parent, (b) experiencing family discord, (c) experiencing foster or some other form of institutional care, (d) living in a crowded home, and (e) attending a school with high turnover of both classmates and teachers. It was found in this study that inner-city children experienced far more of these stresses than did the better-off working-class children. The same result holds in the United States (see Figure 3). In rural New England, only 12 percent of middle-income nine-year-olds experienced three or more physical and psychosocial risk factors, whereas nearly 50 percent of low-income children crossed this same threshold (of three risk factors).

In a national U.S. sample of premature and low birth weight infants, Brooks-Gunn and colleagues similarly found that infants born into low-income families experienced nearly three times more risk factors than their middle-income counterparts by the time they were toddlers. These same low-income toddlers were seven times more likely than their affluent counterparts to experience a very high number of risk factors (≥ 6). The pattern is overwhelmingly clear: Being born into early poverty often means exposure to many more physical and psychosocial risk factors.

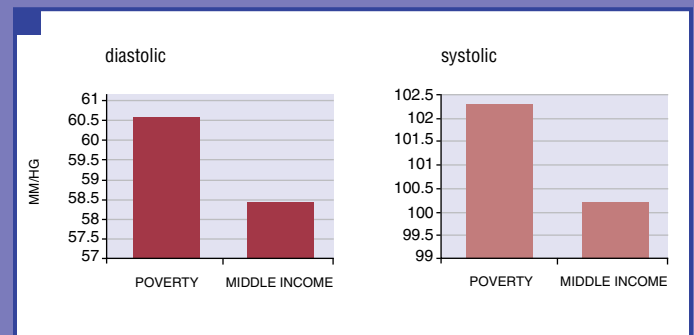
FIGURE 3 Cumulative risk exposure among low- and middle-income rural nine-year-olds.



Note: Cumulative risks include family turmoil, violence, child separation from family, noise, crowding, and housing quality.

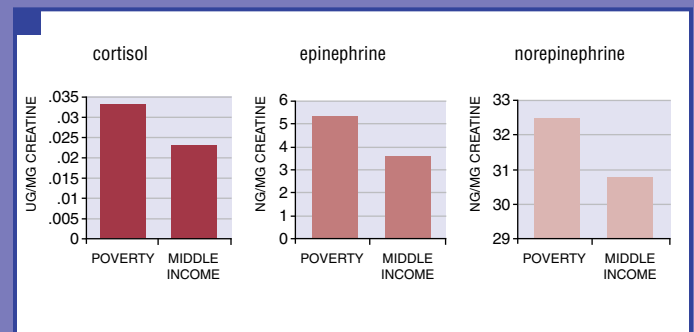
Source: Gary W. Evans and Kimberly English. 2002. "The Environment of Poverty: Multiple Stressor Exposure, Psychophysiological Stress, and Socioemotional Adjustment." *Child Development*, 73(4):1238-48.

FIGURE 4 Resting blood pressure in nine-year-old, White rural children.



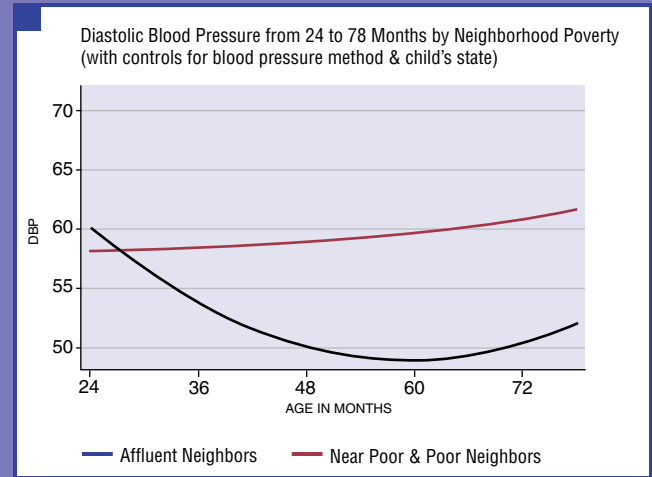
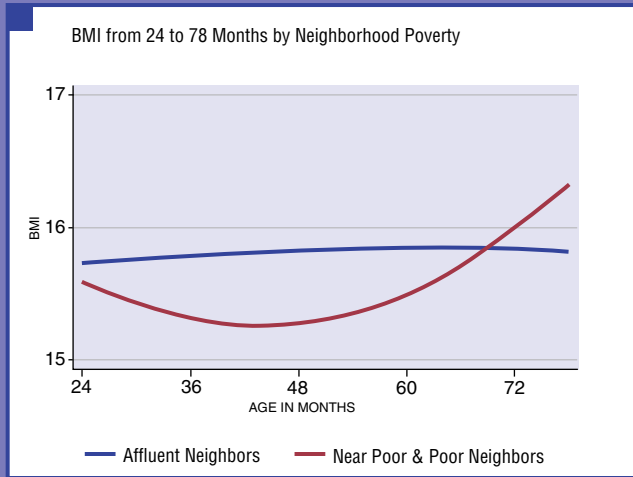
Source: Gary W. Evans and Kimberly English. 2002. "The Environment of Poverty: Multiple Stressor Exposure, Psychophysiological Stress, and Socioemotional Adjustment." *Child Development*, 73(4):1238-48.

FIGURE 5 Overnight stress hormones in nine-year-old, White rural children.



Source: Gary W. Evans and Kimberly English. 2002. "The Environment of Poverty: Multiple Stressor Exposure, Psychophysiological Stress, and Socioemotional Adjustment." *Child Development*, 73(4):1238-48.

FIGURES 6–7 Developmental trajectories in chronic stress in relation to neighborhood poverty.



Cumulative Risk Exposure and Chronic Stress

But does such differential exposure indeed result in higher stress levels among poor children? The simple answer is that it does. In cross-sectional analyses of 9- and 13-year-old children, Evans and colleagues found that the risk exposure described in Figure 3 elevated baseline, resting blood pressure as well as overnight indices of such stress hormones as cortisol. At age 13, when challenged by mental arithmetic problems, children with higher levels of cumulative risk exposure did not show a typical healthy response, instead exhibiting a muted rise in blood pressure. These same children also didn't recover as successfully from the mental challenge posed by these arithmetic problems (as indexed by the longer time it took their blood pressure to return to pre-stressor baseline levels). The evidence thus suggests that children exposed to high levels of cumulative risk are less efficient both in mobilizing and then shutting off physiological activity.

The Risk–Stress Model, as represented in Figure 1, implies that the effect of family poverty on stress is mediated by risk exposure. Although one would ideally like to test that mediation, it's also important to simply document the association between poverty and stress (thereby ignoring the mediating factor). Many investigators have indeed documented that disadvantaged children have higher chronic physiological stress levels, as indicated by elevated resting blood pressure. A smaller number of studies have also uncovered higher levels of chronic stress hormones, such as cortisol, among disadvantaged children. To provide just a few examples, Figures 4 and 5 show elevated resting blood pressure as well as higher overnight urinary stress hormones in a sample of nine-year-old rural children.

The foregoing data, which pertain to nine-year-olds, don't tell us *when* such stress symptoms emerge. Do poverty-stricken children show evidence of elevated stress early on in their lives?

Or do such symptoms only emerge later? With support from the Stanford Center for the Study of Poverty and Inequality, we sought to answer this question by reanalyzing a national data set of very young at-risk children. The Infant Health and Development Program (IHDP) is a representative sample of low birth weight (≤ 2500 grams) and premature (≤ 37 weeks gestational age) babies born in 1985 at eight medical centers throughout the country. This sample of nearly 1,000 babies is racially and economically diverse (52 percent Black, 37 percent White, 11 percent Hispanic).

We assessed resting blood pressure and child's height and weight at 24, 30, 36, 48, 60, and 78 months of age. The collection of physical health data at such young ages and over time provided us with an unprecedented opportunity to examine the early trajectories of chronic stress among a high-risk sample of babies. Both baseline blood pressure levels and Body Mass Index (BMI) reflect wear and tear on the body and are precursors of lifelong health problems. The former is indicative of cardiovascular health and the latter of metabolic equilibrium. BMI, which reflects fat deposition, is measured as height divided by weight (kg/m^2).

We sought to assess whether these two measures of stress are elevated in poverty-stricken neighborhoods. Low-income neighborhoods, as defined in our study, have median household incomes below \$30,000 (in 1980 dollars), while middle income neighborhoods have median income levels exceeding \$30,000 per household. As is evident in Figures 6 and 7, babies growing up in low-income neighborhoods have health trajectories indicative of elevated chronic stress. Additional statistical controls for infant birth weight, health, and demographic characteristics did not alter these trajectories. These figures also reveal, even more importantly, that elevated stress emerges very early for children growing up in low-income neighborhoods. BMI,

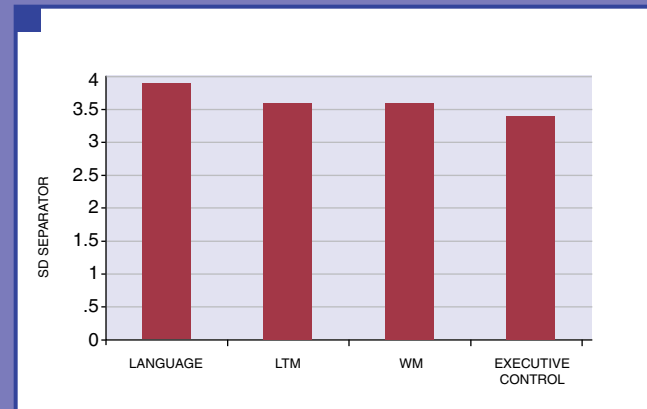
for example, proves to be unusually low among poor children under five years old, but it then takes off as these children grow older. The blood pressure measure, by contrast, registers high among low-income children from almost the very beginning of our measurements (i.e., 24 months). This research confirms, then, that low-income children are more likely than others to develop dangerous stress trajectories very early on in their childhood. As we discuss below, this has profound consequences for their likelihood of success in school and beyond.

Chronic Stress and the Achievement Gap

The next and final step in our chain model pertains to the effects of chronic stress on achievement. Here we turn to an important longitudinal program on poverty and the brain at the University of Pennsylvania conducted by Martha Farah and her colleagues. In a series of studies with multiple samples drawn from lower- and middle-class Black families in Philadelphia, Farah and colleagues show that several areas of the brain appear vulnerable to early childhood deprivation. Using batteries of neurocognitive tests of brain function and brain imaging studies, Farah and other neuroscientists can map the areas of the brain that are recruited by neurocognitive tasks. As shown in Figure 8, among the areas of the brain most sensitive to childhood SES are language, long-term memory (LTM), working memory (WM), and executive control. What the graph depicts is the separation, in standard deviation units, between a low- and middle-SES sample of 11-year-old Black children from Philadelphia. For this sample, one standard deviation represents about one-fifth of the total distribution of scores. Samples differing by 3.5 or more standard deviations are virtually non-overlapping. Given that the samples differ by about 3.5 standard deviations for all four areas of brain functioning, this means that there is *virtually no overlap* between poor and middle-class Black children when it comes to language, long-term memory, working memory, or executive control. Eleven-year-old Black children from lower SES families reveal dramatic deficits in multiple, basic cognitive functions critical to learning and eventual success in society. These results reveal the starkly cognitive foundation to the poor performance of low-income children.

But is this achievement gap attributable to cumulative risk and chronic stress? With a recent follow-up of the sample depicted in Figures 4 and 5, Evans and colleagues have now provided the first test of the final link in the Risk–Stress Model. The baseline finding from their research is that working memory in early adulthood (i.e., age 17) deteriorated in direct relation to the number of years the children lived in poverty (from birth through age 13). If, in other words, a child lived in poverty continuously, his or her working memory was greatly compromised. The main result of interest, however, was that such deterioration occurred only among poverty-stricken children with chronically elevated physiological stress (as measured between ages 9 and 13). That is, chronic early childhood poverty did not lead to working memory deficits among children who somehow avoided experiencing the stress that usually accompanies poverty.

FIGURE 8 Effect sizes measured in standard deviations of separation between low- and middle-SES 10- to 12-year-old, African American children.



Source: Martha J. Farah, David M. Spera, Jessica H. Savage, Laura Betancourt, Joan M. Giannetta, Nancy L. Brodsky, Elsa K. Malmud, and Hallam Hurt. 2006. "Childhood Poverty: Specific Associations with Neurocognitive Development." *Brain Research*, 1110(1): 166-74.

Conclusion

Childhood socioeconomic disadvantage leads to deficits in academic achievement and occupational attainment. It's long been argued that such deficits arise because poor children are exposed to inadequate cognitive stimulation and to parenting styles that don't encourage achievement. We don't dispute the important role of these two variables. But we have outlined here evidence for a new, complementary pathway that links early childhood poverty to high levels of exposure to multiple risks, which in turn elevates chronic toxic stress. This cascade can begin very early in life. Even young babies growing up in low-income neighborhoods already evidence elevated chronic stress. This stress then accounts for a significant portion of the association between poverty and working memory, a critical cognitive skill involved in language and reading acquisition.

The Risk–Stress Model suggests that the poverty–achievement link can be broken by addressing (a) the tendency of poverty to be associated with physical or psychosocial risks (e.g., environmental toxins, family turmoil), (b) the effects of such risks on stress, and (c) the effects of stress on achievement. If this model bears up under further testing, it would be useful to explore which of these pathways is most amenable to intervention.

Gary W. Evans is the Elizabeth Lee Vincent Professor of Human Ecology at Cornell University. Jeanne Brooks-Gunn is the Virginia & Leonard Marx Professor of Child Development & Education and Co-Director of the National Center for Children and Families at Teachers College, Columbia University. Pamela Kato Klebanov is a Senior Research Scientist at the National Center for Children and Families at Teachers College, Columbia University and a Visiting Research Collaborator at the Center for Research on Child Well-being at Princeton University.

The Long Reach of



EARLY CHILDHOOD POVERTY

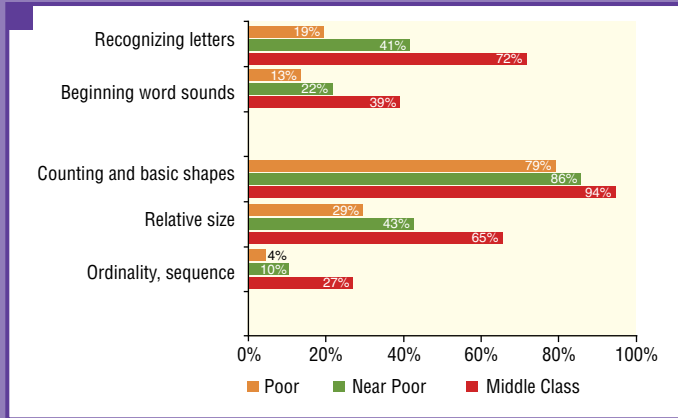
BY GREG J. DUNCAN AND KATHERINE MAGNUSON



Using a poverty line of about \$22,000 for a family of four, the Census Bureau counted more than 15 million U.S. children living in poor families in 2009. Poor children begin school well behind their more affluent age mates and, if anything, lose ground during the school years. On average, poor kindergarten children have lower levels of reading and math skills and are rated by their teachers as less well behaved than their more affluent peers (see Figure 1). Children from poor families also go on to complete less schooling, work less, and earn less than others.

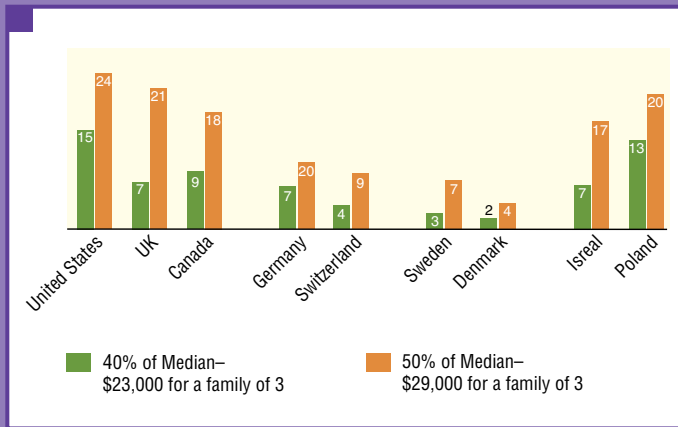
Social scientists have been investigating links between family poverty and subsequent child outcomes for decades. Yet, careful thought about the timing of economic hardship across childhood and adolescence is almost universally neglected. Emerging research in neuroscience and developmental psychology suggests that poverty early in a child's life may be particularly harmful because the astonishingly rapid development of young children's brains leaves them sensitive (and vulnerable) to environmental conditions.

FIGURE 1 Rates of kindergarten proficiencies for poor, near poor, and middle-class children



Source: Authors' calculations from the Early Childhood Longitudinal Survey—Kindergarten Cohort

FIGURE 2 Poverty rates for young children



Source: Gornick, J. and Jantti, M. (forthcoming). "Child poverty in upper-income countries: Lessons from the Luxembourg Income Study." In S. B. Kamerman, S. Phipps, and A. Ben-Arieh (Eds.), *From Child Welfare to Child Well-Being: An International Perspective on Knowledge in the Service of Making Policy. A Special Volume in Honor of Alfred J. Kahn*. Springer Publishing Company.

After a brief review of possible mechanisms and the highest quality evidence linking poverty to negative childhood outcomes, we highlight emerging research linking poverty occurring as early as the prenatal year to adult outcomes as far as the fourth decade of life. Based on this evidence, we discuss how policy might better focus on deep and persistent poverty occurring very early in the childhoods of the poor.

American Poverty and Its Consequences for Children

If we were to draw the poverty line at 50 percent of median disposable income (about \$29,000 for a family of three in today's dollars), as is common in much cross-national research on poverty, nearly one-quarter of U.S. children would be classified as poor (Figure 2). Comparing across countries, the U.S. fares badly, though not too much worse than countries like the UK, Canada, and Poland. More striking are the cross-country differences when the poverty threshold is set at a more spartan 40 percent of median disposable income (about \$23,000). In this instance, the 15 percent U.S. childhood poverty rate is more than half again as high as any country other than Poland. Clearly, deep poverty is considerably more pervasive for children in the U.S. than among children in most Western industrialized countries.

What are the consequences of growing up in a poor household? Economists, sociologists, developmental psychologists, and neuroscientists emphasize different pathways by which poverty may influence children's development. Economic models of child development focus on what money can buy. They view families with greater economic resources as being better able to purchase or produce important "inputs" into their young children's development (e.g., nutritious meals; enriched home learning environments and child care settings outside the home; and safe and stimulating neighborhood environments), and higher-quality schools and post-secondary education for older children. The cost of the inputs and family income constraints are therefore the key considerations for understanding poverty's effects on children.

Psychologists and sociologists point to the quality of family relationships to explain poverty's detrimental effects on children. These theoretical models point out that higher incomes may improve parents' psychological well-being and their ability to engage in positive family processes, in particular high-quality parental interactions with children. A long line of research has found that low-income parents are more likely than others to use an authoritarian and punitive parenting style and less likely to provide their children with stimulating learning experiences in the home. Poverty and economic insecurity take a toll on a parents' mental health, which may be an important cause of low-income parents' non-supportive parenting. Depression and other forms of psychological distress can profoundly affect parents' interactions with their children. But as we argue below, it is not just the fact that these relationships exist that matters, but *when*.

For some outcomes later in life, particularly those related to achievement skills and cognitive development, poverty early in a child's life may be especially harmful.

Why Early Poverty May Matter Most

It is not solely poverty that matters for children's outcomes, but also the *timing* of child poverty. For some outcomes later in life, particularly those related to achievement skills and cognitive development, poverty *early* in a child's life may be especially harmful. Emerging evidence from both human and animal studies highlights the critical importance of early childhood in brain development and for establishing the neural functions and structures that shape future cognitive, social, emotional, and health outcomes. There is also clear evidence emerging from neuroscience that demonstrates strong correlations between socioeconomic status and various aspects of brain function in young children. For clear and compelling evidence on these points, look no further than the pieces in this very issue of *Pathways*.

Intensive programs aimed at providing early care and educational experiences for high-risk infants and toddlers also support the idea that children's early years are a fruitful time for intervention. The best known of these are the Abecedarian program, which provided a full-day, center-based, educational program for children who were at high risk for school failure, starting in early infancy and continuing until school entry, and the Perry Preschool program, which provided one or two years of intensive center-based education for preschoolers. Both of these programs have been shown to generate impressive long-term improvements in subsequent education and employment. Perry also produced large reductions in adult crime.

A Causal Story?

Regardless of the timing of low income, isolating its causal impact on children's well-being is difficult. Poverty is associated with other experiences of disadvantage (such as poor schools or being raised by a single parent), making it difficult to know for certain whether it is poverty per se that really matters or other related experiences. The best method for identifying the extent to which income really matters would be an experiment that compares families who receive some additional money to similar parents who do not receive such money. The only large-scale randomized interventions to alter family income directly were the Negative Income Tax Experiments, which were conducted between 1968 and 1982 with the primary goal of identifying the influence of a guaranteed income on parents' labor force participation. Researchers found that elementary school children whose families enjoyed a 50 percent boost in family income

from the program exhibited higher levels of early academic achievement and school attendance than children who did not. No test score differences were found for adolescents, although youth who received the income boost did have higher rates of high school completion and educational attainment. This suggests that higher income may indeed cause higher achievement, although even in this case it is impossible to distinguish the effects of income from the possible benefits to children from the reductions in parental work effort that accompanied the income increases.

According to newer experimental welfare reform evaluations in the 1990s, though, providing income support to working poor parents through wage supplements does improve children's achievement. One study analyzed data from seven random-assignment welfare and antipoverty policies. All of these policies increased parental employment, while only some increased family income. These analyses indicated improved academic achievement for preschool and elementary school children by programs that boosted both income and parental employment, but not by programs that only increased employment.

These experimental findings suggest that income plays a causal role in boosting younger children's achievement, although here it should be kept in mind that the beneficial welfare-to-work programs increased both income and parental employment. However, combining these results with those from the 1970s experiments, we note that both kinds of programs increased income but produced opposing impacts on work hours. This suggests that the income boost may have been the most active ingredient in promoting children's achievement.

Non-experimental studies that take care to ensure they are comparing families who differ in terms of income, but who are otherwise similar, can also provide strong evidence. One such study took advantage of an increase in the maximum Earned Income Tax Credit for working poor families with more than two children by more than \$2,000 between the years of 1993 and 1997. This generous increase in tax benefits enabled researchers to compare the school achievement of children in otherwise similar—and even the same—working families before and after the increase in the tax credit. And indeed, improvements in low-income children's achievement in middle childhood coincided with the policy change. A second, Canadian study found similar results when researchers took advantage of variation across Canadian provinces in the generosity of Canada's National Child Benefit program to estimate income impacts on child achieve-

ment. Thus, the weight of the evidence suggests that increases in income for poor families are causally related to improvements in children's outcomes.

The Long Reach

None of this past income literature has been able to examine family income early in a child's life in relation to that child's adult attainments. This limitation comes largely from the lack of data on both early childhood income and later adult outcomes. Recent research by Duncan and his colleagues, however, has now made this link using recently-released data from the Panel Study of Income Dynamics, which has followed a nationally representative sample of U.S. families and their children since 1968. The study is based on children born between 1968 and 1975, for whom adult outcomes were collected between ages 30 and 37.

Measures of income were available in every year of a child's life from the prenatal period through age 15. This enabled Duncan and his colleagues to measure poverty across several distinct periods of childhood, distinguishing income early in life (prenatal through age 5) from income in middle childhood and adolescence. The simple associations between income early in life and adult outcomes are striking (Table 1). Compared with children whose families had incomes of at least twice the poverty line during their early childhood, poor children completed two fewer years of schooling, earned less than half as much money, worked 451 fewer hours per year, received \$826 per year more in food stamps, and are nearly three times as likely to report poor overall health. Poor males are more than twice as likely to be arrested. For females, poverty is associated with a more than five fold increase in the likelihood of bearing a child out of wedlock prior to age 21.

None of these simple comparisons, however, considered the various factors that go along with growing up in poverty that also might explain poorer adult outcomes (e.g., single parenthood or lack of motivation). To account for this, we also adjusted for an extensive set of background control variables, all of which were measured either before or near the time of birth. This effort to separate income from other related disadvantages and characteristics of poor children produces smaller correlations than in the absence of these statistical controls. This suggests that a



substantial portion of the simple correlation between childhood income and most adult outcomes can be accounted for by the disadvantageous conditions associated with birth into a low-income household.

But what about the timing of poverty? To better understand whether poverty in early childhood is particularly important, Duncan and colleagues replaced the average childhood income measure with three stage-specific measures of income. As before, adjustments are made for the effects of the extensive array of background conditions.

In the case of adult earnings and work hours, early childhood income appears to matter much more than later income. For some measures, like work hours, there appears to even be a negligible role for income beyond age 5. Early income also appears to matter for completed schooling, but in this case adolescent fam-

ily income seems to matter even more. In contrast, the strong association between overall childhood income and non-marital birth seems to be largely attributable to income during adolescence, rather than earlier in childhood.

More detailed analyses show that for families with average early childhood incomes below \$25,000, a \$3,000 annual boost to family income is associated with a 17 percent increase in adult earnings (Figure 3). Results for work hours are broadly similar to those for earnings. In this case, a \$3,000 annual increase in the prenatal to age-5 income of low-income families is associated with 135 additional work hours per year after age 25. In contrast, increments to early-childhood income for higher-income children were not significantly associated with higher adult earnings or work hours. The implication is clear: If we are hoping that giving parents extra income will bolster their children's chances for success, early childhood is the time to do it.

Refashioning Income Supports

Early childhood is a particularly sensitive period in which economic deprivation may compromise children's life achievement and employment opportunities. Research continues to confirm a remarkable sensitivity (and growing number) of developing brain structures and functions that are related to growing up in an impoverished home.

We also have convincing evidence linking early poverty with both child achievement and adult employment. The achievement studies employ unusually rigorous methods for estimating causal relationships between income early in life and achievement test scores as children age. The effect sizes estimated in these studies are broadly similar. An annual income increase of \$3,000 sustained for several years appears to boost children's achievement by roughly one-fifth of a standard deviation. In the early grades, children's achievement increases by nearly one standard deviation per year, so 20 percent of a standard deviation amounts to about two months' advantage in school.

Very recent research has linked poverty early in childhood to adult earnings and work hours. Although non-experimental, the study's key finding—that income early in childhood appears to matter much more than income later in childhood for a range of employment outcomes—is strikingly consistent with the achievement studies.

Taken together, this research suggests that greater policy attention should be given to remediating situations involving deep and persistent poverty occurring early in childhood. In the case of welfare policies, we should take care to ensure that sanctions and other regulations do not deny benefits to families with very young children. Not only do young children appear to be most vulnerable to the consequences of deep poverty, but mothers with very young children are also least able to support themselves through employment in the labor market.

A more generous, and perhaps smarter, approach would be enacting income transfer policies that provide more income to families with young children. In the case of work support programs like the Earned Income Tax Credit, this might mean extending more generous credits to families with young children. In the case of child tax credits, this could mean making the credit refundable and also providing larger credits to families with young children.

Interestingly, several European countries gear time-limited benefits to the age of children. In Germany, a modest parental allowance is available to a mother working fewer than 20 hours per week until her child is 18 months old. France guarantees a modest minimum income to most of its citizens, including families with children of all ages. Supplementing this basic support is the Allocation de Parent Isolé (API) program for single parents with children under age 3. In effect, the API program acknowledges a special need for income support during this period, especially if a parent wishes to care for very young children and forgo income from employment. The state-funded child care system in France that begins at age 3 alleviates the problems associated with a parent's transition into the labor force.

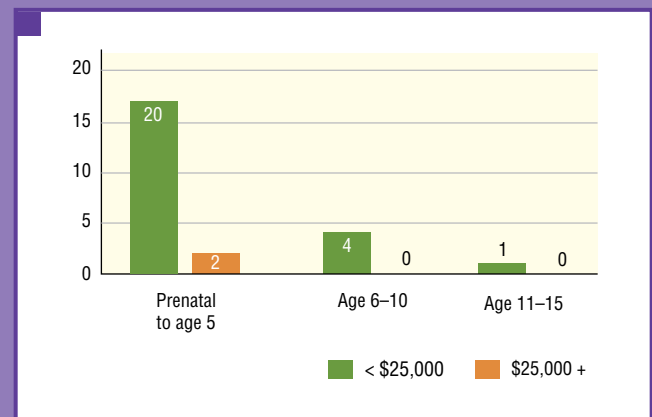
In emphasizing the potential importance of policies to boost income in early childhood, we do not mean to imply that focusing on this area is the only policy path worth pursuing. Obviously investments later in life, including those that provide direct services to children and families, may also be well-advised. Eco-

TABLE 1 Adult outcomes by poverty status between the prenatal year and age five

	Income below the official U.S. poverty line	Income between one and two times the poverty line	Income more than twice the poverty line
	Mean or %	Mean or %	Mean or %
Completed schooling	11.8 yrs	12.7 yrs	14.0 yrs
Earnings (\$10,000)	\$17.9	\$26.8	\$39.7
Annual work hours	1,512	1,839	1,963
Food stamps	\$896	\$337	\$70
Poor health	13%	13%	5%
Arrested (men only)	26%	21%	13%
Nonmarital birth (women only)	50%	28%	9%

Note: Earnings and food stamp values are in 2005 dollars.

FIGURE 3 Percentage increase in adult earnings associated with a \$3,000 annual increase in childhood income



omic logic requires a comparison of the costs and benefits of the various programs that seek to promote the development of disadvantaged children throughout the life course. In this context, expenditures on income-transfer and service-delivery programs should be placed side by side and judged by their costs and benefits, with the utmost goal of making our social investments as profitable as possible.

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THE BIG WHY

A Learning Agenda for the Scale-Up Movement

BY ROBERT C. GRANGER

Policymakers and practitioners who believe that research evidence should inform policy and practice face several challenges. These include debates about the standards of evidence for allocating resources to programs, weak information on how to produce change at scale, and concerns that

a few, well-evaluated programs will drive out others that deserve support. Such challenges threaten to undermine 30 years of progress in learning which social programs improve child, youth, and family outcomes. The purpose of this article is to describe a strategy that can inform these and other issues facing evidence-based policymaking.

Take, for example, programs and policies aimed at improving the well-being of young people. The standard evidence-based position assumes widespread improvement for children and youth will occur through “scaling-up” brand-name programs, models, and organizations that have produced effects in prior evaluations. Do more of what works and less of what does not; the idea seems prudent and has political appeal. There is currently great interest in this approach in the public sector, fueled in part by the availability of federal stimulus funds geared toward scaling up evidence-based programs. Examples include the White House’s Social Innovation Fund (SIF), the Department of Education’s Investing in Innovation Fund (i3), and funding from the Department of Health and Human Services to replicate evidence-based home visitation and teenage pregnancy prevention programs. These initiatives are bold in scope and in their commitment to doing what works.

Prior history shows that programs that are effective at small scale have trouble maintaining that effectiveness when replicated more broadly. Recognizing this, the new initiatives include funding to support building the capacity of existing organizations to implement the evidence-based programs and, for larger projects, strong

evaluation designs to test the effectiveness of the program at scale. This is fortunate because it creates a foundation for providing guidance on questions for which we currently have no conclusive answers: (1) What policies and other conditions improve the likelihood that programs will have positive effects? (2) What organizations or other program-level policies and practices lead to positive effects?

Much research and development work is focused on clarifying the effects created by schools, youth organizations, and programmatic interventions. My argument is that too little of this work examines the conditions, policies, and practices that produce such effects. In today's vernacular, we need more research attention paid to *why* and *under what conditions* things work as the missing ingredients in the "what works" agenda.

The good news is that the launch of the various federal initiatives creates an exceptional opportunity to improve our answers to these *why* and *when* questions. Understanding the answers to these questions would improve our ability to expand effective programs in a way that maintains their effectiveness. Using the new initiatives to pursue these questions has the added advantage of leveraging them to more effectively justify their cost in the current fiscal environment. We will learn about the effectiveness of this work, while also gaining enough knowledge to do even better work the next time. It is an opportunity we should not waste. Before describing how policymakers might pursue the learning agenda, I will explain why I am concerned.

Scale-Up in Practice

For the past seven years, I have been president of the William T. Grant Foundation. Part of running a mid-sized foundation strategically is operating in a way that is flexible and complements the work of larger public and private funders. Given our focus on vulnerable youth, those funders include research agencies such as the National Institutes of Health (NIH) and the Institute of Education Sciences (IES), as well as private funders such as the Edna McConnell Clark Foundation, the Spencer Foundation, and the Bill & Melinda Gates Foundation.

Historically, we, along with our colleagues, have pursued scale-up strategies as we tried to improve outcomes for vulnerable children, youth, and families. One version of scale-up assumes that researchers will develop and incubate new strategies or programs, test those programs under limited circumstances, and then work with policymakers and practitioners to implement and test them at scale. This approach is rooted in the tradition of phased clinical trials in medicine, and NIH and IES favor it. The development of David Olds's Nurse-Family Partnership is a good example, and congressional staff referenced that program heavily when the decision was made to scale-up home visitation as part of health care reform.

A closely related strategy, perhaps best exemplified currently by the Edna McConnell Clark Foundation, is to search for promising organizations, encourage strong evaluations of organizational impact, and then expand the organizations that have

promising evaluation results. This approach is similar to the strategy businesses use to expand their services and market share. Not surprisingly, it is advocated by many of the management consulting firms that are currently working with philanthropic organizations. While NIH has funded many good evaluations of researcher-created programs, there are fewer strong studies of practitioner-developed programs, in part because many organizational leaders have avoided strong tests of their organizational impact. Yet, there are examples—the BELL Accelerated Learning Summer Program (BELL Summer) and the Carerra Adolescent Pregnancy Prevention Program are two.

The two scale-up approaches share a commitment to strong research and evaluation as the basis for assessing promise. This work has led to the identification of model programs and organizations that are effective at small scale, many of which are cataloged on websites created and maintained by public agencies and some nonprofit organizations. The most ambitious example of such a site, and perhaps the best, is the What Works Clearinghouse (<http://ies.ed.gov/ncee/wwc/>) sponsored by the federal Department of Education. Other prominent examples include the Coalition for Evidence-Based Policy's Social Programs That Work (<http://evidencebasedprograms.org/wordpress/>), Johns Hopkins University's Best Evidence Encyclopedia (<http://www.bestevidence.org/>), and the University of Colorado's Blueprints for Violence Prevention (<http://www.colorado.edu/cspv/blueprints/>).

Concerns about the Scale-Up Model

Despite the research community's ability to identify promising programs, there is almost no evidence that it is possible to take such programs to scale in a way that maintains their effectiveness. A recent report from the National Academies underscores this concern.

The 2009 report *Preventing Mental, Emotional, and Behavioral Disorders Among Young People: Progress and Possibilities* concludes that substantial progress had been made in identifying efficacious interventions during the past 15 years, but that "thus far, however, preventive interventions have not been widely implemented in schools and communities and have done little to reduce behavioral health problems in American communities" (p. 297). While calling for more research on how to "implement and disseminate" interventions, the report also quotes a paper by Dean Fixsen and colleagues that synthesized what is known about the problems of implementation and replication of model programs. Fixsen and colleagues argue that "successful implementation is synonymous with coordinated change of system, organization, program, and practice levels," and note that such coordination rarely exists.

Most current scale-up initiatives, including those the Obama administration is launching, are consistent with the Fixsen analysis: Better support, incentives, and infrastructure will lead to wider diffusion of model programs and organizations. Such improvements may lead to better results. However, the mixed

success of prior efforts sends a strong message that changes via replication of evidence-based programs may never be enough to produce widespread improvements for vulnerable youth without additional adjustments to the strategy.

Programs as One Influence on Youth

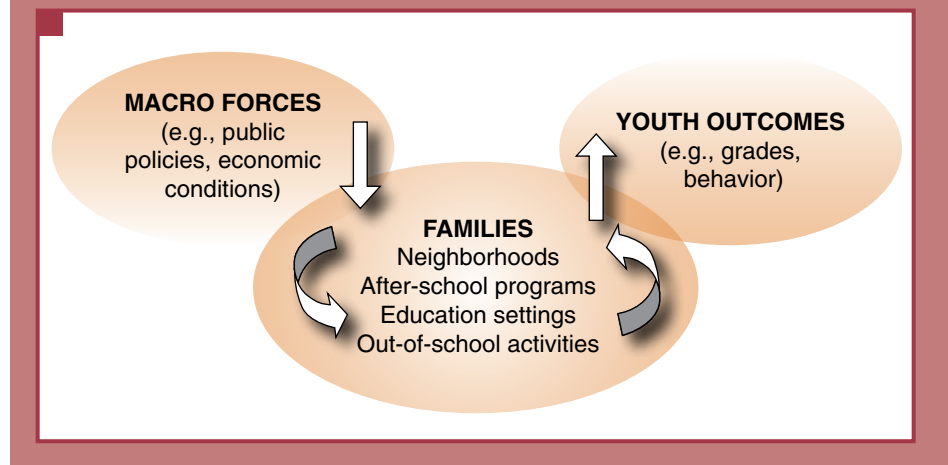
No one is satisfied with the current outlook for youth in the United States. Too many young people lack the skills necessary for achieving success in school, work, and life. As we try to improve outcomes by increasing the availability and number of effective programs, it might be useful to consider how such programs fit into the larger array of forces that affect young people. Figure 1 depicts how youth development is influenced by what happens in the daily environments where youth spend their time: classrooms, households, neighborhoods, community-based programs, and in informal activities with peers and others. What happens in any one of these daily settings is influenced by what happens in the others (e.g., events at home influence what goes on in school and vice versa).

Powerful secular trends and unpredictable historical events shape these daily settings, as do public policies. For example, shifts in immigration patterns alter who is in our classrooms, an oil spill affects household incomes, and the evolving labor market influences how much the skills developed in a youth employment program are rewarded in the job market. Similarly, policies shape the nature of programs in intended and unintended ways (e.g., changes in accountability policies are meant to improve what goes on in schools but may also encourage more test preparation in lieu of other teaching).

Figure 1 is a useful reminder that we ought to be modest in our expectations of any scale-up effort that does not transform daily life, and programs are unlikely to be as transformative as the policies, secular trends, and historical events that shape youth and their daily settings. This makes it all the more impressive when evidence-based programs do beat the odds and make a difference for young people. (The criteria used in the social sciences to confer “evidence-based” on a program requires that it produce improvements in youth outcomes greater than those that would have happened without the program.)

Documenting this difference is not as difficult as it may seem. The best evaluation designs for measuring program effects (known as field experiments) use a lottery to allocate access to a program when it has excess demand. The lottery creates two equivalent groups, one who can attend the program under study and another who can attend similar programs in the community. The two groups are followed, and when the outcomes for

FIGURE 1 The ecology of youth development.



the two groups differ at a level not likely to be due to chance, the difference is logically attributed to the difference in experiences created by one group having access to the program of interest.

Learn When and Why Programs Are Effective

In the past 30 years, we have become much better at understanding how to conduct such lottery-based studies in “real-world” settings to produce accurate estimates of program effects. Such studies have made it possible to have a coherent discussion of what it means to be “evidence-based.” However, no single study tells us much about the conditions under which a program is effective, the policies that help it produce results, the capacities that affect an organization’s ability to implement an innovation, or the staff practices that directly improve youth outcomes.

If a program produces uniformly positive effects across multiple locations, these questions are less critical. However, that is rarely the case. Summaries of such program evaluations indicate that, although programs show outstanding results in some cases, most often they produce no net gain over the status quo, and occasionally, innovative programs are less effective than existing alternatives in the community.

Learning more about why and under what conditions programs are effective is possible once you have reliable estimates of those effects. In addition, you need good measures of the conditions, policies, and practices within and outside the program that *might* influence effects, along with a large number of lottery-based studies in which such measures can be used. With the data gathered from such measures, it is possible to look across the individual studies and find the conditions, policies, and practices that predict effects.

Researchers have productively applied this strategy in a number of prior efforts. For example, in 2003, MDRC’s Howard Bloom and colleagues pooled the information from three large multi-site studies of the effects of welfare-to-work strategies on participant earnings. In these studies, different local

welfare offices all used lotteries to decide if welfare recipients should receive innovative (but untested) services or services as usual, creating 59 small-scale experimental studies (i.e., one per office). Bloom and his colleagues then examined whether or not the condition of the local labor market predicted the impact of the innovative services on earnings (it did).

Prior to the Bloom analysis, some argued that innovative services for welfare recipients would be more effective when the unemployment rate was low, implying available jobs for participants if the services improved their motivation and preparation for those jobs. Others thought that the welfare-to-work programs would have less effect in such an environment, given that it would be relatively easy for clients to get jobs without help. It was also possible that people receiving welfare when unemployment was low would be particularly hard to employ and therefore difficult to help.

Bloom and colleagues found support for the first theory—welfare-to-work programs did better in labor markets in which unemployment was low. In their analysis, they found that the average program increased participant earnings by \$879 during a two-year follow-up, but that a 1 percentage point increase in the local labor market's unemployment rate reduced that impact on earnings by \$94, with all other factors equal. While the study could not tell us why the local labor market mattered, such a finding is useful for situating such innovative programs and predicting their effects across communities.

Bloom and his colleagues also examined whether certain welfare-to-work practices were more effective than others—at least in the short term. Some were. The programs that emphasized quick job entry increased the average effect on participant earnings (\$879, as noted above) by another \$720, while those that emphasized basic education as preparation for work reduced the average earnings by \$16. All estimates were larger than those expected to occur by chance.

Joseph Durlak and Roger Weissberg recently produced similar work in their review of the effects of after-school programs. They synthesized the results of 66 evaluations of after-school programs, looking at the effects on nine different measures of youth performance including social, behavioral, and academic performance. On average, they found positive effects on a number of important youth outcomes assessed in the different evaluations. However, a subset of programs created large effects, and many programs created no net effects beyond those of a comparison group of youth. In trying to explain these results, Durlak and Weissberg identified four characteristics common to the subset of effective programs—each had a sequenced approach, got youth actively involved in learning, was focused on a few goals, and had activities explicitly tied to those goals. The group of programs that had the SAFE characteristics (i.e., sequenced, active, focused, and explicit) created statistically significant impacts in all nine outcome categories assessed, while the cluster of programs that did not have all four characteristics had no positive effects.

As promising as this work is, it is not common, in part because investigators are limited to analyzing data originally collected in earlier studies. For example, Durlak and Weissberg were able to reliably code for the presence or absence of the SAFE characteristics, but it seems clear that such characteristics do not affect youth directly. Rather, they are in some way related to the daily experiences that young people have in programs. It is possible that the positive effects are caused by the staff practices created in SAFE programs, and thus improving certain staff practices is the best path to achieving better youth outcomes. At this point, we do not know, because almost none of the prior after-school studies generated data on staff practices at the point-of-service. Those that did collect such information did not gather comparable data in the “control” condition, so it is impossible to know how the experiences of the two groups of youth differed over time.

A Learning Agenda for the Scale-Up Movement

Currently, it appears that federal agencies will use their various scale-up initiatives to produce reliable information on whether or not individual programs produce positive effects for young people when they are extended to new participants, organizations, and communities. However, these agencies are positioned perfectly to learn more. For example, in the Department of Education's \$650 million i3 fund, a large number of innovative programs—with promising but limited track records—will receive \$30 million each to try to replicate their positive effects at scale in multiple locations. Given the priorities stated for i3, many of these efforts will focus on ways to improve teacher effectiveness or help failing schools. After a few years, it is likely that the evaluations will produce the usual results—each innovation succeeded in some instances, but not in others. It is possible to take a page from analysts such as Bloom et al. and Durlak and Weissberg and increase our knowledge about *why* that happened. I will outline one possible process for gaining that knowledge.

After funding decisions are made for each of the new initiatives, it is likely that federal and state funders will require a subset of grantees—probably those with larger grants—to conduct strong impact evaluations of their expansions. The funders should then foster a consensus on common data to be collected across the impact evaluations. Progress could be made with relatively little information.

The following questions are at the heart of current debates. For each question, I've added a suggested way to collect good information to form the answer. Because we are trying to predict the patterns of effects across studies (and across sites within a sample study), this information should be collected prior to the beginning of the scale-up efforts (i.e., at “baseline”).

1. **How does the rigor and extent of the prior research evidence of effectiveness predict effectiveness at scale?** (Capture the rigor and extent of prior evidence in the review process.)

2. **Are programs more effective with certain youth and families than others?** (Gather common measures of participants across evaluations at baseline.)
3. **Are certain scale-up strategies more likely than others to produce effects at scale?** (Categorize the planned scale-up strategies along practical dimensions, such as how expensive and how prescriptive they are.)
4. **Are scaled-up programs more likely to make a difference in some environments than others?** (Capture relevant baseline information on environmental factors that might influence effects, such as the mobility of youth or the extent to which services analogous to the innovation are available in the community.)
5. **Are certain program approaches more likely than others to produce effects at scale?** (Categorize program strategies along practical dimensions, such as the degree to which they are highly structured, their cost, or their presumed intensity and duration of services.)
6. **Are there organizational policies, capacities, or practices that predict effectiveness when an organization replicates an evidence-based program?** (Capture baseline information on proxies for organizational capacity, such as the stability of funding, leadership, and line staff.)

Not all of these data will be easy to acquire. Therefore, I would encourage a disciplined process in which a few items related to these questions are measured well. While some of this will require document review or a brief survey (e.g., information on financial stability, the baseline information on participants), much of it will be accessible from the applicants' proposals (e.g., the program approach, the scale-up plan).

I understand that there is often a large difference in what is planned and what occurs and that organizations and innovations change over time in ways that may influence the effectiveness of the innovative program. That variation will be captured by local evaluators and can be used to explain results. However, such information, gathered after the fact, is not available to funders or program operators when they are making their plans and deciding on how to allocate finite resources. My suggestion is to gather additional information earlier to be used after the study is complete, in order to better understand the variation in implementation and impacts that is likely to occur within and across the various scaled innovations. How much evidence should funders require before supporting a program expansion? And what approaches to expansion produce the best results? We can learn the answers to these questions with a little effort and foresight.

My suggestions do require some cross-study planning and agreement, though not much. The Bloom et al. experience shows that it is possible for one firm (in this example, MDRC)

to collect such information across multiple states and many local programs, and the Durlak and Weissberg review proves that it is possible to extract common information from disparate evaluations done by different teams. The new initiatives could provide consistent data across a large number of individual studies in many locations. This is exactly the scenario needed to permit the analyses I am suggesting.

Such coordination may produce additional benefits. Program developers frequently talk about the features that they believe distinguish their particular innovation and rarely acknowledge that there may be a set of strategies and practices common to all effective youth programs whether or not they have been rigorously evaluated. For example, in a recent compendium of observational measures of youth program quality, Nicole Yohalem and Alicia Wilson-Ahlstrom (of The Forum for Youth Investment) examined the content of nine measures that are widely used to assess effective staff practices in youth programs. Although the measures varied slightly (e.g., some measured program management practices while others did not), all of them measured six common features of staff's work with youth: (1) the supportiveness of relationships; (2) the program environment's safety; (3) the predictability of the program's structure and routines; and practices that produced (4) positive engagement, (5) positive social norms, and (6) the opportunity to build new skills. The recognition of these commonalities is shaping subsequent work in the after-school field, as we try to identify the practices that produce good results. It is the sort of information we need in all youth fields to move beyond an endless stream of model-specific impact evaluations.

Answering the Big Why

I have argued that the results from scaling-up evidence-based programs have not been encouraging, in part because we do not know the conditions that lead to positive effects or what distinguishes the practices of programs that produce such effects from those that do not. My suggestions will not provide definitive answers to these questions. At the end, we will still have correlates of impact results, and we will not know if these correlates are causal agents. However, the ability to examine how well factors such as program context, content, and practices predict youth-level effects would put us far ahead of our current level of understanding. It is difficult to create a change in a young person's experiences that has an impact on their long-term well-being. Thanks to rigorous evaluations of the effects of social programs, under some circumstances, we have found such effects. We need to use the scale-up initiatives to help us learn why.

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