



NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

is a multi-disciplinary collaboration of leading scholars in neuroscience, early childhood development, pediatrics, and economics. Housed at the Center on the Developing Child at Harvard University, the Council works to bring sound and accurate science to bear on public decision-making affecting the lives of young children.

For more information on the Council and the science of early childhood, go to www.developingchild.net.

Closing the Science-Policy Gap

A Conversation with Pediatrician Jack P. Shonkoff

Abstract: The National Scientific Council on the Developing Child was founded to close the gap between what we know and what we do to promote the healthy development of young children. When scientific knowledge is ignored rather than used to inform early childhood policy and practices, our children pay a very high price. Council Chair Jack P. Shonkoff, M.D., discusses the goals of the Council and four key conclusions of science that can be used to guide policy: human development is as much a function of “nurture” as of “nature;” the essential influences on children’s development are their relationships with their caregivers; the development of intelligence, language, emotions, and social skills are highly interrelated; and programs informed by scientific knowledge about child development can pay important dividends for the children and for society.



Jack P. Shonkoff, M.D., chairs the National Scientific Council on the Developing Child. Dr. Shonkoff is also Director of the Center on the Developing Child at Harvard University and the Julius B. Richmond FAMRI Professor of Child Health and Development at the Harvard School of Public Health and Harvard Graduate School of Education. He is a Board-certified pediatrician whose work focuses on early childhood health and development and the interactions among research, policy, and practice. He also chaired the Committee on Integrating the Science of Early Childhood Development for the Institute of Medicine and the National Research Council of the National Academy of Sciences, and co-edited its final report, *From Neurons to Neighborhoods: The Science of Early Childhood Development*.

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Jack Shonkoff isn't easily flustered. His years as an academic dean and pediatrician serve to temper his responses. But get him started on the priority this nation places on its children and his exasperation shows. “The bottom line,” he says, “is that there is an unacceptably wide gap between what we know and what we do to promote the healthy development of young children.” It surely doesn't have to be this way. “At a time when scientific advances could be used to inform more enlightened policy and strengthen early childhood practices,” he says, “knowledge is frequently dismissed or ignored—and our children are paying a very high price.”

And therein rests the greatest challenge—and a uniquely promising opportunity—for members of the National Scientific Council on the Developing

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Child, which was launched in 2003 under the chairmanship of Shonkoff. With expertise bridging neuroscience, developmental psychology, the social sciences, and more, the Council members are anchored at the frontier of exciting research on the human brain and early development; and their involvement will assure that the Council's work is grounded firmly in state-of-the-art science. Together, these experts share Shonkoff's commitment to narrowing—and, with luck, closing—the troubling gap that today divides scientific knowledge from wise policy and effective practices.

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The Council will pursue several complementary goals. To begin with, it intends to increase the priority and visibility of research about early childhood development—educating opinion leaders and the general public to help shape more effective policies as they relate to children and the many community influences that nurture them. Similarly, Shonkoff says, “We want to establish the Council as a resource for credible, objective, peer-reviewed information.” In his view, the Council can occupy “an important niche as a respected and trusted group that is anchored to the highest standards of academic rigor and driven by science rather than a partisan agenda. To this end we view ourselves not as traditional advocates but as knowledge brokers.” And a related goal, says Shonkoff, is to help produce a new generation of “publicly literate scientists,” future leaders skilled at translating the latest science of child development into language both parents and policy makers can understand.

Building on a Strong Foundation

This promising initiative builds on years of hard work from two pioneering groups focused on the science of early childhood. The first, a special committee of the National Research Council (NRC) and Institute of Medicine (IOM), brought together 17 leading authorities on human development and neuroscience for an unprecedented review of the existing knowledge base on early childhood. For two and a half years, the group (formally named the Committee on Integrating the Science of Early Childhood Development) compiled, analyzed, and evaluated a massive body of scientific data about the first five years of life, with a special focus on the fascinating ways in which the young brain develops. Their effort culminated in the publication of *From Neurons to Neighborhoods: The Science of Early Childhood Development* (October 2000), whose unprecedented scope attracted impressive reviews and widespread accolades.

The second group, the Research Network on Early Experience and Brain Development, was a multi-year effort involving leading neuroscientists and child development experts, some of whom also served on the NRC/IOM committee. For the last five years, with core support from the John D. and Catherine T. MacArthur Foundation, this body has conducted wide-ranging research on the effects of early experience on brain development and behavior. The Network asks—and seeks to answer—the compelling



question of how this expanding knowledge base can influence the decisions our society makes about supporting the health and development of young children.

When the efforts of the NRC/IOM committee concluded with the publication of its landmark report in 2000, Shonkoff, who chaired that effort, and his colleagues were determined to see that their intensive investment of time and energy yielded something more than a weighty report collecting dust on bookshelves. Instead, they agreed, their work must open a new chapter focused on translating and communicating the science of early childhood development into informed public policy that best serves the needs of the nation's children and families.

From Pediatrics to Policy

Shonkoff's path from idealistic young pediatrician to academic leader and Council founder is an interesting, if atypical, one. He entered college with plans for a career in medicine, but his longtime fascination with the nexus between politics and social change led him to choose a government studies major over the conventional science route. Medical school soon followed, as did a residency in pediatrics. "I haven't given up on the idea that a powerful way to change the world is to make it better for kids," he explains.

His first clinical experience—as a young physician in a community health center in the South Bronx—served up a sobering dose of reality. "I learned quickly that all of the things I was trained to do in medical school prepared me for the easy part of being a pediatrician," he says. "The real problems these kids were facing extended far beyond the walls of the hospital and the clinic, and were much harder to solve."

Subsequent fellowship work focused on the evaluation and management of children with developmental disabilities reinforced Shonkoff's view that children's health needs are closely intertwined with the broader circumstances of their daily lives. Early interventions that addressed poverty, substandard education, mental health challenges, and the wellbeing of parents and caregivers—that is, the large constellation of factors that threaten child health and development—would appear to offer the greatest chance of success for the youngsters he saw daily, he thought. But, too often, these problems were seen as separate and distinct by the experts responsible for addressing them: the medical practitioners didn't talk to the research scientists, and neither group talked to the people who make or implement public policies that affect young patients like his.

That realization, Shonkoff says today, profoundly molded his thinking several years later when he was tapped to help launch a new Board on Children, Youth, and Families at the National Academy of Sciences in Washington, DC. At the group's first meeting in 1993, he proposed a panel study on early childhood development that would bring together diverse constituencies invested in the wellbeing of children—bridging the worlds of science, policy, and practice—to share their knowledge and articulate an integrated agenda. "I had lived professionally in all of those worlds, and it was

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clear to me that these highly compartmentalized pieces of the policy and practice pie were all guided by the same underlying knowledge base," he recalls. "I therefore put on the table the idea that this newly established Board should sponsor a study to demonstrate that there is a single science of early childhood development, not different sciences related to early care and education, poverty, disability, mental health, and child maltreatment, among others"—a revolutionary proposition at the time.

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Despite initial concerns among some Board members that the proposed project was too ambitious, Shonkoff's idea would eventually gain steam. His persistence and singleminded vision paid off when the Clinton White House agreed to host a high-profile conference on Early Childhood Development and Learning in 1997, attracting widespread attention—and much-needed financial support—for research in the field.

Before long, the Board on Children, Youth, and Families raised sufficient funds to launch the study committee Shonkoff would soon chair, and *From Neurons to Neighborhoods* began to take shape.

What the Science Tells Us About Development

Summarizing that voluminous review of the research is no easy task, but Shonkoff offers four core conclusions from the science of early development, which will help guide the work of the new Council.

First, human development is as much a function of "nurture" as it is of "nature," with the physical and cultural environment playing a significant role in shaping the brain's capacities to think and feel, to learn, and adapt to new situations. Substantial evidence shows clearly that the longstanding nature versus nurture debate is scientifically obsolete, and that each of us is the product of both a unique genetic endowment and the impacts of our personal life experiences. Indeed, a vast range of environmental influences profoundly shapes individual development beginning before birth and continuing long into adulthood.

In this regard, it can be helpful to think of a young child as a tender plant whose successful growth is affected by the seed from which it sprouted as well as a diverse mix of weather conditions like sunlight, rain, and temperature. In very similar ways, our own children's healthy development depends on both genetics and the favorable conditions they encounter in their earliest years of life.

A second key conclusion of the science community is this: The essential features of the environment that influence children's development are their relationships with the important people in their lives—their parents and other family members as well as child care providers, teachers, and coaches—within the places to which they are exposed—from playgrounds to libraries to schools to soccer leagues. Think of your own upbringing, Shonkoff says, and the important ways in which your life has been affected by members of your extended family, your school, and your neighborhood. Children learn respect for others, right from wrong, how to get along with peers, and



so much more from a vast circle of relationships, each of which can influence their development for a lifetime. Nobody grows up alone and nobody parents alone. This is what the Council terms “the environment of relationships.”

“When their primary relationships provide love and stability, children thrive,” Shonkoff adds. “But when these relationships are unstable, neglectful, or disrupted by major life stresses like poverty, substance abuse or mental illness, the adverse consequences can be severe and long lasting.” The point can’t be overstated: Whether good or bad, a child’s earliest interactions and relationships affect the development of his or her evolving brain architecture in profound ways.

Third, the development of intelligence, language, emotions, and social skills is highly interrelated. Starting soon after birth, children “can feel the exhilaration of mastering a challenging task as well as the deep and lasting sadness that builds in response to trauma, loss, or early personal rejection,” he says. In something as simple as a game of “peek-aboo” or playing with blocks, a young child is exploring and interacting with people and things in ways that are vitally important to his or her social, intellectual, and emotional development. Young children also learn as the adults around them imitate or “mirror” their facial expressions, coos, and gestures. This interactive process is a kind of back-and-forth conversation between kids and their surroundings—where children are active participants and a good environment is one that responds in a supportive and individualized way. Today, more and more science shows us that successful development requires this kind of interaction—exploring on the part of the child with lots of positive feedback from the environment, which activates her or his internal “feedback loop” to support both effective learning and sound mental health.

And fourth, early childhood programs can have important positive impacts on young children with a wide range of developmental needs, but those that work are rarely simple, inexpensive, or easy to implement. “There are no magic bullets or quick fixes for addressing the complexities of human development,” Shonkoff says. But we do have very good evidence that well-designed interventions definitely can shift the odds toward more favorable outcomes for children in a range of areas—how they think, how they communicate, how they feel, and how they are able to interact with others. “When early childhood services are informed by scientific knowledge about human development, they return both short-term developmental dividends and long-term human capital gains,” he adds. Children need us to take care of them as individuals today, says Shonkoff, so they will be able to give back to all of society tomorrow.

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How Our Scientific Knowledge Can Help Guide Wise Investments for Children

The science of early childhood development has real and important consequences for public policymaking, says Shonkoff. When asked for examples, he recites a detailed list of programs with ease. And barely missing a beat, he points out the numerous ways in which many policies and services that affect young children fail to reflect our knowl-



edge base about kids' basic needs. Shonkoff's mission is to make sure the programs we offer all children are rooted in credible evidence that assures their success.

Take education reform, for example. "How can we call for stronger standards and more competitive salaries to attract and retain highly qualified teachers for our nation's elementary schools, and then turn around and tolerate inadequate training and poor compensation for the providers of early care and education throughout the important preschool years?" Shonkoff asks incredulously. "Who came up with the idea that the quality of the learning environment and the skills of the supervising adults don't matter

for our youngest kids? That not only flies in the face of decades of research, but it also makes no sense." Shonkoff goes on to say that if science informed our policies, we'd act on the extensive research that shows how the quality of a child's earliest experiences is a predictor of his or her later success in school.

Similarly, the current national focus on reading tests for ever-younger students fails to recognize the comparable importance of the social and emotional determinants of early learning. "Knowing the alphabet on your first day of school isn't enough if you can't sit still or control your temper in the classroom," Shonkoff observes. "Providing early literacy training without attention to a child's emotional health is like fertilizing a prized rose bush while neglecting to water its roots." Indeed, extensive research clearly indicates that "we must pay as much attention to children's emotional well-being and social development as we do to their cognitive skills" in these critical early year—not more, but certainly not less," he says.

And while these observations are true for all children, they are especially important for youngsters in low-income families. The science shows quite clearly that poverty in early childhood is a strong predictor of all sorts of problems—including academic failure—for which there are effective solutions if we intervene early enough.

But by and large, "the welfare system for families living in poverty focuses largely on increasing maternal employment and pays relatively little attention to the well-being of their children. So again, here is a blatant disconnection between what we know and what we do to take care of the kids." If we provided better supports for parenting and assistance in developing marketable skills for women receiving public assistance, as well as good quality care and education for their children, Shonkoff believes, our society would get a much better return on its investment in public efforts to break the intergenerational transmission of poverty.

When it comes to the nation's patchwork of early childhood policies and services, Shonkoff asks, "Why not simply look at what science has to say about interventions that work and those that don't?" Whether it's promoting early literacy, fostering children's mental health, or protecting youngsters from abuse or neglect, there is a rich foundation of developmental science that can be drawn on to address the challenge. That science, he suggests, provides much better guidance than partisan politics for achieving positive outcomes for children. We have to start with the child's well-being as the goal and work backward.

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Meeting Needs in a Time of Scarce Resources

Many children's advocates report an array of impressive "cost-benefit" statistics to press their case for public investments—citing studies, for example, that show every dollar invested in early childhood programs yields up to \$17 in long-term benefits to society.

Shonkoff underscores the critical importance of such financial benefits, and calls for a parallel commitment to the moral imperative of nurturing, protecting, and ensuring the health and well-being of all young children as an important objective in its own right, independent of whether measurable financial returns can be documented in the future. "This should not be a choice between social justice and return on investment," he says. "Both are essential."

Shonkoff knows that expensive programs to address children's needs face a tough sell in today's fiscal climate—both in Washington and in cash-strapped state capitols from coast to coast. In this context, he views the battles over budget priorities as falling within the realm of the advocates. As a knowledge broker rather than an advocate, Shonkoff believes that the Council should address a different set of questions: Given finite resources, what are the best ways to invest those funds that are earmarked for young children? "Our goal will not be simply to push for increased funding. We'll leave that to the advocates, who are much better than academics at that kind of task. Our role will be to say, 'However much money you have decided to spend on children, let us tell you what science has to offer about how to get the biggest bang for the buck.'" And in times of scarcity like the present—with everyone fighting over a more limited pot of dollars—that role is more important than ever, he says.

So, will the Council endorse controversial political fixes to the many problems facing America's children? Unlikely, says Shonkoff. "We intend to be stubbornly nonpartisan," he insists. He predicts that the Council will rarely, if ever, endorse specific legislation, although that decision ultimately rests with the group as a whole.

Toward that end, Shonkoff's dream for the National Scientific Council on the Developing Child looks something like this: "Whenever any policymaker—from the most liberal to the most conservative—is dealing with an early childhood issue, our group will be on his or her 'short list' of places to go to get reliable, credible, and useful information that can inform honest, constructive dialogue. At the end of the day," he muses, "we are eager to demonstrate that academics can be both rigorous and relevant in the policy arena." And ultimately, he hopes, these attributes will serve a higher purpose by helping bring about real, lasting improvements in the lives of America's most precious resource: its children. ●

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The Interviewer: Dorian Friedman is the policy editor at *The American Prospect*, a monthly political magazine, and a former associate editor at *U.S. News & World Report*. She is based in Washington, D.C.