

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

# A Decade of Science Informing Policy

The Story of the National Scientific Council on the Developing Child



Center on the Developing Child  HARVARD UNIVERSITY

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### CURRENT

**Alliance for Early Success (formerly the Birth to Five Policy Alliance)**

**Buffett Early Childhood Fund**

**Doris Duke Charitable Foundation**

**Palix Foundation**

### PAST

**Casey Family Programs**

**Ewing Marion Kauffman Foundation**

**John D. and Catherine T. MacArthur Foundation**

**The Johnson & Johnson Pediatric Institute**

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**The Susan A. Buffett Foundation**

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# A DECADE OF SCIENCE INFORMING POLICY

## The Story of the National Scientific Council on the Developing Child

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For the past decade, a diverse group of distinguished scientists has worked to translate complex research about early brain development into language that is scientifically accurate, highly credible, understandable to nonscientists, and useful to public decision makers. Across the United States and around the world, in both public and private sectors, the work of the National Scientific Council on the Developing Child has helped change the conversation about providing young children with a healthy, safe, and nurturing start in life.

As the Council passes its tenth anniversary and looks ahead to the next phase of its work, its members are committed to leveraging the rapidly advancing frontiers of 21st-century science to catalyze innovative investments that will achieve dramatic improvements in the life prospects of young children facing adversity. In recognition of ten years since the publication of the Council's first working paper, this retrospective not only tells the story of how the group came to be and what its impact has been, but also how its members do their work and the lessons learned about how and why the Council has made a difference.

## Closing the Gap Between Science and Policy

The two decades bracketing the turn of the 21st century were explosive periods of scientific discovery and new understanding of human development. The 1990s saw the launch of the Human Genome Project and were declared the “Decade of the Brain” by President George H.W. Bush. Rapid advances in neuroscience and neuro-imaging technology led to tangible evidence of the effects of early experience on brain development. By 2003, the human genome had been decoded and new attention was being focused on extensive research showing that environmental influences actually alter gene expression. Today, current knowledge in both neuroscience and genomics points toward the unmistakable conclusion that the experiences and relationships we have as children exert a lasting biological influence on our learning, behavior, and health across the life course.

As exciting as this time was for scientists, some became increasingly disturbed by the gap between their research on early development and the reality that too many young children—especially those facing adversity—were not being well served by existing policies. Fifteen years ago, relatively few U.S. states were even discussing the idea of investing in the early childhood period. Scientific knowledge simply wasn’t reaching key decision makers and the unrealized potential of too many children was being jeopardized.

“There were still significant parts of the country where a discussion about public policy related to early childhood began and ended with a sole focus on parent responsibility,” says Jack P. Shonkoff, M.D., founding chair of the National Scientific Council on the Developing Child and currently professor of child health and development and director of the Center on the Developing Child at Harvard University, which is now the Council’s administrative home. Many policymakers, he says, thought there was “no reason to be talking about public programs for infants and toddlers” because, in their view, the care and education of children that young was a private, family matter. They had not yet heard about the science showing how much impact *all* relationships and environments have on development and how much benefit society could reap from supporting child well-being in the earliest years.

As the 21st century began, rapidly expanding knowledge in the biological sciences created an

unprecedented opportunity for researchers to blend findings from diverse fields, such as neuroscience, developmental psychology, molecular biology, and genomics, into an integrated “science of early childhood development.” Indeed, Shonkoff, a pediatrician by training who at the time was the dean of the Heller School for Social Policy and Management at Brandeis University, was engaged in two multidisciplinary activities that were simultaneously taking steps to bring together knowledge from multiple fields and use it to change the national conversation about the early childhood years.

First, the National Academy of Sciences (NAS) Board on Children, Youth, and Families, which Shonkoff chaired, created the Committee on Integrating the Science of Early Childhood Development in 1997. It was this group, with Shonkoff serving as committee chair and Deborah A. Phillips, Ph.D. (the founding di-

**Rapidly expanding knowledge in the biological sciences created an unprecedented opportunity for researchers to blend findings from diverse fields.**

rector of the Board on Children, Youth, and Families and currently professor of psychology at Georgetown University) serving as study director, that authored the joint National Research Council and Institute of Medicine report, *From Neurons to Neighborhoods: The Science of Early Childhood Development*. This landmark document was released in 2000, capitalizing on a growing fascination with the developing brain among political leaders,



MacArthur Research Network on Early Experience and Brain Development (1998). Front row (l-r): Jack P. Shonkoff, Charles A. Nelson III, Marcy Ray (rapporteur), Nathan A. Fox, Alisson Doupe, and Judy L. Cameron. Back row (l-r): Hermi Rojhan (MacArthur Foundation), Pat Levitt, Eric I. Knudsen, Charles Zeanah, and David Amaral. Missing: Susan McConnell, B.J. Casey, and Marion Sigman.

educators, and new parents, and sparking new insights about how policy might respond to authoritative science.

Second, Shonkoff was a member of the MacArthur Research Network on Early Experience and Brain Development, which was formed in 1998 and chaired by University of Minnesota professor Charles A. Nelson III, Ph.D. (now a professor of pediatrics and neuroscience at Harvard Medical School). The John D. and Catherine T. MacArthur Foundation had charged the Network with developing a research agenda to investigate sensitive periods of development and how the brain is altered by experience throughout the lifespan, along with a public education strategy related to its research findings.

## A “Dream Project” and a Unique Partnership

Shonkoff was determined from the start of the NAS committee process that *From Neurons to Neighborhoods* would be much more than a report that was released, discussed for a few days, and then forgotten, and he promised that to prospective members of the Committee. “This was my dream project,” he says. “I wanted to use this opportunity to model how an NAS report could be followed by a disciplined action agenda.”

Phillips “vividly” remembers their shared determination that the report wouldn’t meet the proverbial fate of collecting dust on a shelf. Instead it would be used to launch “some mechanism for constantly updating the scientific base,” she says, as well as to point to the implications for policy. “The National Academy was not set up to give their reports ‘legs,’ so we knew this would need to happen through a different infrastructure,” Phillips recalls. “We also knew this was an ongoing knowledge updating and translation job, requiring explicit collaboration with policymakers, but looking back, I think we didn’t fully appreciate the complexity of the translation part.”

“The [NAS] panel worked hard to write the report without scientific jargon so it could be read by practitioners and policymakers,” recalls committee member Megan R. Gunnar, Ph.D., professor and current director of the Institute of Child Development at the University of Minnesota. She remembers the panel meeting at which this decision was made and sees a direct line between that determination and the Council’s focus on “not only getting the science

right, but also getting the communication of the science right.”

According to Nelson, the MacArthur Network provided grants to members of the network to support their neuroscience research. As the only nonscientist in the group, Shonkoff submitted a proposal to fund the initial meetings of what would become the Council. The goal was, in Nelson’s view at the time, “to focus on ‘giving away’ the knowledge of brain development to policymakers.” As chair, Nelson approved the award, leading to a series of meetings of an invited subset of members of both the NAS committee and the MacArthur Network.

At an initial gathering in Alexandria, Virginia, in 2003, these members—representing a broad range of scientific disciplines, including neuroscience, developmental psychology, economics, and pediatric medicine—brainstormed and created what later became the National Scientific Council on the Developing Child. The original mission was embraced unanimously by the founding members—to “close the gap between what we know and what we do” to promote the healthy development of young children

by catalyzing public and private action grounded in the science of early childhood. “Midway through the meeting,” Shonkoff recalls, “it was clear that we had a lot to say and there was a lot that could be done.”

But saying what they wanted to say *effectively* would be far more complicated than most Council members expected. To address this challenge from its earliest, formative days, the Council invited veteran communicators, including journalist Cathy Trost, publisher David Lawrence, and health science translator Jessie Gruman to contribute to how this emerging group would translate and share important scientific findings with the public. One of these experts, Susan Nall Bales, founder and president of the FrameWorks Institute, brought a research-based approach that resonated with Council members. Indeed, the group’s earliest charters discuss the “combination of developmental and communications research” to “address a critical shortcoming in past efforts focused on public education.”

The FrameWorks Institute, which would become a key and enduring partner in this effort, proved a good fit for the Council’s emerging agenda. Using theories and methods from the social and cognitive sciences, FrameWorks conducts research to understand the communications challenges of a particular issue and alternative ways to frame that issue to improve public understanding. This approach—Strategic Frame Analysis—helps ensure that the Council will translate the science with fidelity. It identifies where people default to assumptions that make science hard to access and apply, and develops and tests ways of communicating that help people engage with new ideas.

Over more than a decade of working together, there have been many times when Council members questioned the communications science, reexamined the science to distill the most important messages, and grappled with incorporating the translated science into their repertoire. Yet it is this back-and-forth dialogue between the developmental science and the communications research that has propelled the Council’s unique voice into the public discourse.

Over the ensuing ten years since that initial meeting in Alexandria, the Council and FrameWorks have worked together to develop and hone not only a powerful message, but also a process for combining the achievement of scientific consensus with effective communication to

nonscientists. “For many of us, there was initially some resistance to what we perceived—incorrectly, it turns out—as the ‘dumbing down’ of our science for policymakers,” says Nelson. “Of course, we all later changed our minds and thought this was precisely the right course of action.”

“We realized that we had to work with those who were experts in language, social science, and communication in order to succeed,” seconds developmental neurobiologist and MacArthur Network member Pat Levitt, Ph.D., who was then at Vanderbilt University. “In fact, I would argue that we had to go through our own education first, in order to embark on the mission of the Council.” By avoiding ideological influences, embracing the rigorous standards applied to peer-reviewed research, and adopting the uncompromising nonpartisanship of the National Academy of Sciences, the Council has not only communicated important research about why the early years are so important, but it has done so in a way that has changed the level of understanding of public decision makers.

Rounding out the initial membership of neuroscientists, developmental psychologists, pediatricians, and communications experts was a small but important group of economists who studied the financial returns on investment in early child-

**Ten years later, reflecting a nationwide groundswell of interest in the early years, every state has some type of early childhood agenda.**

hood. The early inclusion of these economists in the Council’s deliberations—member Greg J. Duncan, Ph.D. (then at Northwestern University) and contributing members Arthur J. Rolnick, Ph.D. (then with the Federal Reserve Bank of Minneapolis) and James J. Heckman, Ph.D. (of the University of Chicago)—was also “instrumental in placing early child and brain development into a practical context of human capital formation,” recalls Levitt, who is now a professor at the University of Southern California and Children’s Hospital Los Angeles, and has served as the Council’s science director since 2009.

Ten years later, reflecting a nationwide groundswell of interest in the early years, every state has some type of early childhood agenda. There is widespread recognition that what happens during the early years of life can either contribute to children’s healthy development or set them up for later problems in school and throughout life. This was evident most notably in President Barack Obama’s 2012 and 2013 State of the Union addresses, as well as in bipartisan legislation in dozens of states. Terms and phrases from Council materials have been cited in legislation in dozens of states, have appeared in bills and testimony before the U.S. Congress, have been highlighted by countless child-focused organizations, and have inspired the development of prevention and intervention

programs for families with young children in the United States and around the world. The Council is not alone, of course—many individuals and organizations have contributed to the growth in awareness and understanding of the importance of the early years. But science, communicated effectively, has clearly played a critical role.

“When you make the argument about science instead of ideology, it makes all the difference,” says Daniel J. Pedersen, who served as the founding president of the Buffett Early Childhood Fund, one of the earliest investors in the Council. “The Council has done a magnificent job of connecting the truth of the science to a vocabulary that actually motivates policymakers instead of dividing them into the red camp and the blue one.”

## Creating a Core Story of Child Development

Bringing together a group of highly esteemed scientists representing multiple disciplines from across the country to work toward a common, action-oriented goal was itself a significant accomplishment. However, the group soon learned that even bigger challenges lay ahead. Even after sharing knowledge across academic boundaries and engaging in vigorous debates to arrive at a meeting of the minds, they still needed to

bring that science to decision makers in ways that could not only be understood, but also used to inform policy and practice. What they learned was that the science does not speak for itself.

Several of the founding Council members, for example, had already been speaking to groups of policymakers, but felt they weren’t making enough impact. Levitt, for example, had often left his presentations feeling like the audience didn’t get the point. “Using shorter sentences and simpler nouns wasn’t cutting it,” he says. Audiences would ask questions that indicated a lack of understanding of what Levitt had just described. They seemed to consider brain development to be of purely academic

interest, he recalls, disconnected from child development, “where the cultural dominance of ‘family’ would typically be front and center.”

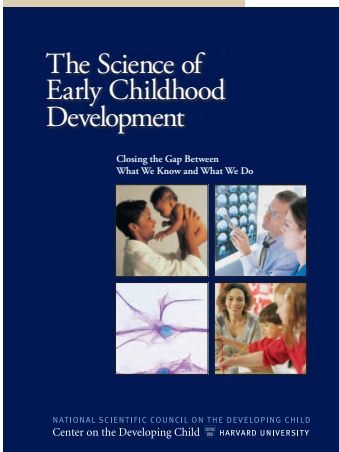
Shonkoff, too, was frequently invited to give presentations and would often leave feeling “pretty good” about his talk. But he realized that

he didn’t actually have any insight about what his audience was thinking or what they understood about the science he was discussing.

These concerns were confirmed by what FrameWorks researchers were documenting: the general public, and even policymakers themselves, had very little understanding of how development happens. Most respondents referred to some combination of genes, parents, communities, schools, and no small amount of fate as the ingredients that make for a “successful” or an “unsuccessful” child, but *how* that happens remained a “black box” for all but a few.

Council members learned early on that, without a basic understanding of how development happens, people could not be expected to productively “hear” the science they had to share, let alone develop policies aligned with this rapidly evolving knowledge.

Thus began a years-long effort to construct what came to be referred to as the “core story of development” (see sidebar). Over the course of many Council meetings, participating scientists debated the essential concepts



This 2007 report presented the Council’s “core story,” a concise overview of the science of early childhood and brain development.



that should be included in any foundational understanding of how development happens, how it gets derailed, and how to get it back on track (or keep it from getting derailed in the first place).

The result of that work was an “expert story” about child development that represented scientific consensus, but one that was *untranslated*, meaning it was not yet ready to communicate to nonscientists. It included concepts such as the impact of early experiences on brain development, the interconnected nature of social, emotional, and cognitive skills, the importance of early relationships and reciprocal interaction with caregivers, and the role that brain plasticity plays in our ability to adapt at different stages of life.

The idea of a core story emerged as FrameWorks researchers participated in Council meetings and listened carefully to the science that the members were trying to communicate. They suggested that making this story understandable would require systematic study and, with the support of the Council’s early funders, FrameWorks was tasked with leading a research-based approach to identifying new ways of communicating the science that would both overcome the preexisting barriers to understanding it and connect it to potential policy solutions.

“Looking back, we know that making the science user-friendly increased awareness, knowledge, and most importantly, action,” recalls Lisa G. Klein, the executive director of the Alliance for Early Success and a long-time Council funder. “It’s now widely used as a base for effective advocacy and policy action.”

Pedersen agrees. “I have always had a predisposition for clearer communication, so perhaps I was a pushover for the idea,” he says. “But I will never forget sitting around the Council table watching the wordsmiths spar with the scientists about what language was really communicative and the scientists push back about what language was really truthful. It is one of the finest multi-year tennis matches I have ever witnessed. And the good news is, both sides won.”

In 2004 the Council published its first two working papers, *Young Children Develop in an Environment of Relationships* and *Children’s Emotional Development is Built into the Architecture of Their Brains*. These were followed in 2005 by *Excessive Stress Disrupts the Architecture of the Developing Brain*. These three papers reflected a judgment, based on

research with the public, that these were the most important scientific topics that needed to be explained to policymakers in order to overcome prevailing misconceptions about child development. The Council members saw these working papers as a means to disseminate key concepts—namely, that children need environments that are more than just safe from physical harm; that emotional development is just as important as and is interrelated with cognitive development; and that excessive stress does not “build character.”

The papers also unveiled the first use of FrameWorks’ research to communicate these concepts through “explanatory metaphors” such as brain architecture, serve and return relationships, and the taxonomy of positive, tolerable, and toxic stress.

## THE CORE STORY OF CHILD DEVELOPMENT

The Council has worked in partnership with the FrameWorks Institute to simplify highly complex scientific concepts about child development into a *core story* that reflects a sophisticated understanding of the developmental process, yet is still understandable to lay audiences. The original concepts of the story follow below:

- **Early experiences in life build “brain architecture,”** with simple circuits forming first and more complex circuits building upon them.
- **Children develop in an environment of relationships** that begins in the family but also involves other adult caregivers. The developmental process is fueled by a reciprocal, “serve and return” process, in which young children naturally reach out for interaction and adults respond—and vice versa.
- **Genes and environments interact to shape the architecture of the brain.** Genes provide the basic instructions, but experiences leave a chemical “signature” authorizing how and even whether the instructions are carried out.
- **Cognitive, emotional, and social capacities are inextricably intertwined,** and learning, behavior, and both physical and mental health are highly interrelated over the life course. We can’t have one without the other.
- **“Toxic stress” derails healthy child development** and can have long-term negative effects on learning, behavior, and physical and mental health.
- **Brain plasticity and the ability to change behavior decrease over time,** so getting things right the first time produces better outcomes and is less costly, to society and individuals, than trying to fix them later.

Over the years, as the breadth of the Council’s translated science has grown, so has the core story, which now includes such concepts as executive function skills, mental health, and resilience.

By 2006, the Council was ready to publish a single document that would connect all of the core story concepts: *The Science of Early Childhood Development: Closing the Gap Between What We Know and What We Do*. Using the full scope of the Council’s scientific syntheses and communications research to date, this paper laid out six core concepts of development and their implications for policy and practice. Since the release of that publication, this evolving core story has formed the foundation for all Council communications, from presentations to papers to videos and even interactive features and games. It also grounds future topics in a basic understanding of the science of development and has been extremely powerful in facilitating the abilities of

nonscientists to improve policies and practices that affect not only the development of young children but also the social and economic well-being of society.

Building on the initial working papers and their public presentations, Council members soon found they had tapped a deep well of demand for clearly communicated science about the early years. “It spread like wildfire,” recalls Gillian Najarian, who served as executive director of the Council in its early years and is now managing director of the Center on the Developing Child. “Council members were becoming very sought-after in terms of explaining the science and building up a case about why we should care, and about *why* this is a wise area for public investment.”

## The Conceptualization and Viral Impact of “Toxic Stress”

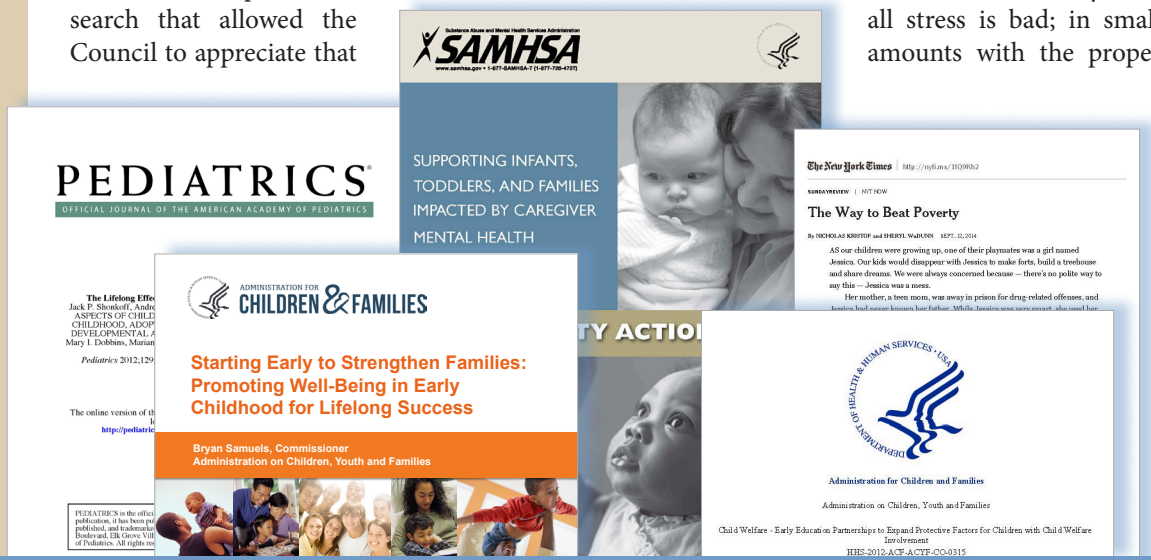
When its members selected the effects of significant stress on young children as one of their first scientific topics, FrameWorks’ Susan Bales warned that the Council would not be able to get its message across without first studying what people think and know about stress and how a new scientific message might navigate those preexisting perceptions.

“Just saying ‘stress’ more loudly wasn’t going to get them where they needed to go,” she says. “People have this belief that early exposure to adversity only makes you stronger. We could show empirical research that allowed the Council to appreciate that

belief as a real obstacle, not an unsubstantiated impression.”

To the Council members, the science painted a much more nuanced and complex picture of stress. Certainly not all stress is bad; in small amounts with the proper

“Toxic stress” has been widely referenced in publications ranging from policy briefs to national newspapers to peer-reviewed journals.



support, experiencing stress is a necessary part of healthy development. However, the stress that the Council wanted to underscore is the kind that occurs as a result of significant and persistent adversity (such as from chronic neglect, recurrent abuse, or the consequences of severe poverty) in which a child is not receiving adequate adult support and nurturing, and is not being helped to develop the kind of adaptive capacities that bring an activated stress response system back to baseline. That kind of excessive, unrelenting stress can cause lasting physiological harm to the developing brain and other maturing organ systems—and this needed to be communicated in a way that nonscientists could easily understand.

With FrameWorks’ research informing them, Council members learned that the biologically disruptive effects of severe, unbuffered stress they wanted people to understand had to be presented as part of a taxonomy explaining the differences among positive, tolerable, and what the scientists ultimately agreed would be labeled “toxic stress” (see sidebar). The debates and discussion about how to describe these various domains of stress went on for almost two years, with significant tension arising among the scientists. The challenge was to balance the need for clear communication with staying completely

true to the science. Tackling its most difficult task to date, the Council was determined to “get it right.” That approach set a standard the group would apply to all future topics.

The widespread effects of this approach to communicating the biology of stress have been remarkable, even to Council members. “Toxic stress” has been cited widely in a broad array of policy documents and in print, web, and broadcast media around the world. The following are just a few examples:

- Toxic stress was referenced in a draft of the 2007 reauthorization of Head Start and was cited in a 2012 U.S. Senate bill to amend the Child Care and Development Block Grant.
- The Administration for Children and Families in the U.S. Department of Health and Human Services (HHS) has awarded grants to six Early Head Start-university partnerships focusing on “buffering children from toxic stress.” This initiative is designed to identify infants and toddlers who are most vulnerable to stress and implement parenting interventions to lower the risks.
- A 2012 “action guide” issued by the Substance Abuse and Mental Health Services Administration within HHS—*Supporting Infants, Toddlers, and Families*

## THE TAXONOMY OF STRESS

The Council needed an effective way to communicate the negative effects of excessive and persistent stress on a young child’s brain and other developing organ systems. When Council members refer to stress, they describe three different levels of biological response and their impacts.

### Positive stress response

is a normal part of healthy development and refers to the transient increases in heart rate and hormonal levels that occur when a child is first left with a new caregiver or is given a shot at the doctor’s office.

### Tolerable stress response

refers to significant activation of the body’s “alert systems,” as might occur after the loss of a loved one or a natural disaster, *in the presence of adult support*. If the child is cared for by at least one responsive adult who provides a sense of security and protection, the stress response doesn’t last for an extended period of time, and the child’s brain and other organs can recover from potentially damaging effects.

### Toxic stress response

is the unrelenting activation of stress response systems in the absence of adequate support or protection from adults. It can be precipitated by serious adversity, such as extreme poverty, frequent neglect, physical or emotional abuse, or maternal substance abuse and can lead to stress-related diseases or deficits in learning and behavior across the lifespan.

*Impacted by Caregiver Mental Health Problems, Substance Abuse, and Trauma*—includes a section on how “toxic stress” harms the development of the brain.

- The American Academy of Pediatrics issued a policy statement in 2012 calling for a “leadership role for the entire pediatric community...to catalyze fundamental change in early childhood policy and services” by “leveraging science to inform the development of innovative strategies to reduce the precipitants of toxic stress in young children and to mitigate their negative effects on the course of development and health across the life span.”
- A 2014 commentary in the prestigious medical journal *Lancet*, co-authored by UNICEF Executive Director Anthony Lake and WHO Director-General Margaret Chan, cited the

Council’s third working paper and referred to a wide range of global threats to child well-being as “situations that produce toxic stress in children, including chronic deprivation and prolonged hunger, domestic violence and abuse, and the effects of living through violent conflicts and other catastrophes.”

- Toxic stress has been cited accurately, and Council members have been quoted or featured extensively, in numerous media accounts and opinion pieces since 2006, including in *The New York Times*, *USA Today*, *Time*, *The New Yorker*, *Education Week*, National Public Radio, *Education Nation* (NBC News), HBO, *Frontline* (PBS), and a range of non-U.S. publications, including *VEJA* (Brazil), *Shanghai Daily*, *Al Watan Daily* (Kuwait), and *Guatemala Times*.

## Reaching Policymakers

Initially, Council members thought that working papers and presentations would be their primary vehicle for communicating scientific knowledge broadly. However, similar to the strategy that followed the publication of *From Neurons to Neighborhoods*, the intent was for these publications to live beyond their release date and to have an ongoing influence on specific target audiences.

Megan Gunnar remembers the questions they grappled with at the earliest Council meetings about that audience. “Would it be the business community? The education community? Parents? Finally, we decided that we would focus on being a credible source for policymakers.”

“Focusing on policy is the surest way to have the greatest impact,” agrees Alliance Director Klein, who worked at the Ewing Marion Kauffman Foundation when they supported the printing and dissemination of the *Neurons to Neighborhoods* report. “Policies with smart and necessary funding sustain and scale good programs so more kids and families benefit.”

While federal policymakers certainly have watched the work of the Council through the years, the members decided early on that directing their attention primarily toward state policy would be a more effective strategy. “A lot of the action is at the state level,” points out Greg Duncan, an economist who is now a professor of education at the University of California, Irvine.

“There are 50 different states with 50 different levels of openness to scientific information

about children,” explains Gunnar. “Our goal was not to try to work in all 50 states, at least not at first, but to work with states that wanted to work with us in nonpartisan ways to understand the science of development and then act within their states to figure out how to use that information to improve the health and well-being of their populations.”

Confirming the group’s initial inclination to target state-level policymakers primarily, Steffanie Clothier, then a program director at the National Conference of State Legislatures (NCSL) and currently senior policy director at the Alliance for Early Success, attended the group’s second meeting, after being introduced to the Council’s work by a mutual funder. She remembers being asked to explain how NCSL might work with the Council to inform state legislation and to help make up for the members’ lack of experience in the policy arena.

“The fun part about being in on the first days of the Council is that there were still a lot of questions about what the Council should be, what were the lines that they shouldn’t cross,”

Clothier says. If the Council members had instead decided to direct their materials to parents, she posits, they never would have been as effective, and the message probably would have gotten lost in the sea of parenting advice websites available on the Internet.

NCSL became an early and important distribution channel for the Council's working papers by linking to them in newsletters and other materials that reach all 50 states. Clothier also got hard copies into the hands of legislators, when opportunities arose at various meetings, and eventually enlisted half a dozen NCSL members to participate in a co-sponsored Council-NCSL Legislative Working Group.<sup>†</sup> Formed in 2005, the group provided a more formal space in which scientists and legislators could come together and personally educate each other.

"It had a bi-directional premise," says Najarian. "The scientists would teach the legislators about the science in a more in-depth, hands-on way, and the policymakers would teach the scientists about the policy process and how to help move a policy agenda." Clothier agrees that the relationship between the Council and NCSL has been a true partnership: "We weren't just there to give a little input."

South Carolina State Senator Robert "Wes" Hayes, Jr. (R) says that, when he was invited to participate in the working group, he didn't know "all that much about the importance of early childhood education." But he describes serving with the group and interacting with the scientists as "one of the high points of my legislative career. It gave me the opportunity to learn from experts about how a child's brain develops, and that there are opportunities to learn that, once lost, cannot be remediated."

In 2007, the National Governors Association's Center for Best Practices (NGA) joined the partnership with the Center and NCSL, bringing its network of executive-level officials and insight into the development of state-level policies and programs relating to child care, early intervention, child welfare, and preschool, among other areas. Through this tripartite relationship, a new non-partisan group was created—the Working Group on Early Childhood Science and Policy—which included state legislators and leaders of executive branch agencies around the country.<sup>\*\*</sup> NGA also sponsored a series of governors' summits on early childhood in multiple states, which often featured Council members as keynote speakers.

In 2008, the partnership among the Center, Council, NCSL, and NGA culminated in a National Symposium on Early Childhood Science and Policy, designed to build leadership capacity for developing and implementing science-based policies that enhance children's learning, behavior, and health. Fourteen state-based teams of legislators, gubernatorial policy advisors, and business and civic leaders came to Harvard and heard presentations by Council members Shonkoff, Levitt, Nelson, and Gunnar, among other experts, as a foundation for developing state action plans.<sup>\*\*\*</sup> Six of those states



Council chair Jack P. Shonkoff, M.D.

received follow-up technical assistance, and early childhood policy agendas continue to flourish in most of the states that attended.

In Pennsylvania, for example, participating in the symposium led to the dramatic growth of the Pennsylvania Early Learning Investment Commission (ELIC), a public-private partnership that supports business leaders to advocate for early childhood policies across the state. According to a 2013 report by ELIC's then-director Diane Halstead, "Last year, we saved about \$10 million from being cut, and \$25 million the year before, from our statewide pre-K program. We now have 76 ELIC members and nine active regions working on individual projects that are generating funding for scholarships for children and teachers."

In other states, most notably Washington, the far-reaching impacts of embracing the science as communicated by the Council continue to be felt in many ways.

<sup>†</sup>See Appendix A for a complete list of Working Group members

<sup>\*\*</sup>See Appendix B for a complete list of Working Group members

<sup>\*\*\*</sup>See Appendix C for a complete list of state teams

## Impact on Policy and Practice

Fueled by both the credibility of the Council's membership and the clarity of its communications, many of the group's science-based explanatory metaphors have become part of the public's understanding of the importance of the early years. These metaphors and other language from the working papers have shown up in state legislation and in drafts of bills related to child policy and early education in Hawaii, Kansas, Michigan, Minnesota, Nebraska, Vermont, and Washington, among other states.

This language has also been incorporated into numerous speeches, news articles, and op-eds, and currently appears within hundreds of websites and documents, sometimes without any attribution given to the Council or the Center—a use that the members welcome. Some of the explanatory metaphors now even appear in peer-reviewed, scientific publications, Levitt notes, further demonstrating how broadly they have been accepted. Council working papers and reports have been cited about 250 times in peer-reviewed papers, and the phrase “toxic stress” (as related to children) appears in over 3,000 journal articles listed in Google

Scholar, as of late 2014. The 2007 publication, *A Science-Based Framework for Early Childhood Policy* (which the Council jointly authored with the National Forum on Early Childhood Policy and Programs) was cited in a 2009 federal court case in Arizona in which plaintiffs were seeking services for infants and toddlers with developmental delays under the federal Individuals with Disabilities Education Act (IDEA).

Over the past decade, a number of state legislators have relied on the Council's materials and presentations to push for improvements in services for young children and their families. In 2006 for example, Council-NCSL Legislative Working Group member and Washington State Representative Ruth Kagi (D) introduced a bill to create a Department of Early Learning (DEL), thereby providing a more effective and efficient system for ensuring safe and nurturing environments for children in their earliest years. At that time, services for young children in the state were scattered across multiple departments,

exemplifying the typically fragmented way government agencies have treated early childhood across the U.S.

As often happened with proposals relating to children younger than school age, the Washington legislature became polarized between those who advocated for publicly supported services and those who characterized government-sponsored programs as an attempt to interfere with parents' decisions about the care of their children. Having learned about the science of early childhood development through her involvement with NCSL, Kagi invited Shonkoff to share the Council's work with a bipartisan group of legislators. She wanted them to learn about how abuse, neglect, maternal depression, and other adverse circumstances can have negative effects on a young child's developing brain. She credits the science for shifting the conversation and leading to broad-based support for the creation of the agency, which continues to be a critical resource for the state's children.

“We might have gotten the bill without him,” Kagi says about Shonkoff's visits to the state, “but we wouldn't have gotten the bipartisan support that has been so important in Washington.”

According to Kagi, the Council's work also influenced the revision of Washington's policy regarding referrals for therapeutic child-care services designed to treat the effects of trauma and restore supportive relationships. Previously, children were only referred to these services through the child welfare system—*after* abuse and neglect had been reported. But when state officials met with Shonkoff and learned of the long-term impact of toxic stress, Kagi says, they moved to expand program eligibility to include children whose families are receiving financial support through Temporary Assistance to Needy Families (TANF). This policy shift reflected a recognition that poverty can lead to environments in which children may experience toxic stress.

### A Science-Based Framework for Early Childhood Policy

Using Evidence to Improve Outcomes in Learning, Behavior, and Health for Vulnerable Children



Center on the Developing Child HARVARD UNIVERSITY  
NATIONAL FORUM ON EARLY CHILDHOOD PROGRAM EVALUATION  
NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

This 2007 report built upon the scientific story by adding program evaluation and policy implications.

Kagi also recently called on the Council's work to inform the foundational principles and goals of a bill that would create an integrated, high-quality, full-day early learning program in Washington called Early Start. "Understanding the importance of the first three years of a child's life has focused the policy discussion on early care and education for low-income children,

## "The science has 'stuck' in the policy discussions."

— Jessie Rasmussen, president of the Buffett Early Childhood Fund

not just pre-K for 3- and 4-year-olds," says Kagi, who adds that the bill is "my highest priority next session."

Some of the strongest early evidence of the impact of the Council's work can also be seen in staunchly conservative Nebraska, where Shonkoff first presented the core story of development to legislators in 2005. The following year, broad-based endorsement of new legislation created the Sixpence Early Learning Fund, a public-private partnership supporting high-quality, center-based and at-home services for disadvantaged infants and toddlers. Since its creation, the Sixpence Fund has been supporting parent engagement, home visiting, and early childhood education programs in 22 locations across the state, reaching a level of investment far beyond the original \$60 million.

Jessie Rasmussen, president of the Buffett Early Childhood Fund since 2011, continues to see legislators in Nebraska demonstrate their awareness of the science, in spite of changing membership. "The science has 'stuck' in the policy discussions in Nebraska, despite turnover in elected officials, because the facts are compelling and the source is scientists, not advocates," says Rasmussen. "Additionally, the frequent use and repetition of the scientific facts by unusual voices like police chiefs, retired generals, and university presidents has kept the message alive." Just recently, she says, a Republican senator helped push through a \$10 million budget increase for Sixpence, noting "that is a lot of money in Nebraska."

Other examples in that state include a recent decision by the Nebraska Department of Health and Human Services to allow, as Washington does, funding from the federal Medicaid program to cover therapeutic interventions for children who have experienced abuse or neglect. Meanwhile, a new bill proposes creating a team of mental health specialists who can work with child care providers across the state who are serving young children with serious social and emotional problems. To date, those services have only been available in Omaha. There is also a growing effort to make sure that judges who hear abuse and neglect cases involving children under the age of five understand the science of early childhood development, as well as a push to make intensive therapeutic services available to all young children involved in these cases.

In South Carolina, Hayes says the expansion of the state's prekindergarten program for at-risk 4-year-olds can be "tracked, to a great extent, back to the Council." In addition to "what I learned as part of the working group," he adds, Shonkoff "made several visits to South Carolina, and his presentations had a profound impact on policymakers." Indeed, if any additional expansion takes place, Hayes says he would like to see services extended to 3-year-olds—in keeping with the knowledge that early intervention is more effective for the most disadvantaged children—instead of opening up pre-K classes to all families. "This is not babysitting," he says. "This is where you can really have an impact."

The National Scientific Council on the Developing Child (2014). Front row (l-r): Jack P. Shonkoff, Nathan A. Fox, Linda C. Mayes, Judy L. Cameron, and Megan R. Gunnar. Back row (l-r): Pat Levitt, Greg J. Duncan, Philip A. Fisher, and Takao K. Hensch. Missing: Silvia Bunge, Fernando D. Martinez, Bruce S. McEwen, and Charles A. Nelson III.



## Extending the Impact Globally

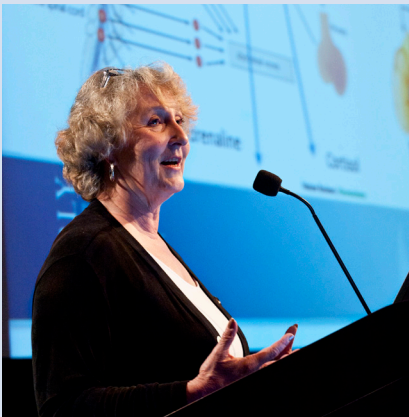
Even though the Council has focused explicitly on policies at the state level, the impact of its work has also reached outside U.S. borders. Nancy Mannix, patron and chair of the Alberta, Canada-based Palix Foundation, found the Council’s work to be exactly what she had been searching for to help stop cycles of addiction and poor mental health. She has invited many Council members to speak in Alberta, and the Council’s publications have been referenced throughout official policy documents relating to human services and child development across the province. Following the Council’s lead, Mannix also asked FrameWorks to study attitudes to addiction, early childhood development, and mental health in Alberta, thereby creating a valuable, cross-cultural knowledge base of scientific understanding.

“We believed there was a connection between childhood experiences and later adult health outcomes, but was there science to validate that?” Mannix says. “When we found this work, it was a foundational piece of what we needed.” In 2007, the Palix Foundation created the Alberta Family Wellness Initiative (AFWI), which is working to integrate neuroscience into Canadian policy and practice. A visit to the Initiative’s website reveals multiple links to Council papers and videos. Recently AFWI staff collaborated with the Center and FrameWorks to produce their own video, *How Brains are Built: The Core Story of Brain Development*, which illustrates the concepts of

“brain architecture” and “serve and return,” and describes the taxonomy of stress.

Further examples of the influence of the developmental science and communication research on policy in the province include *Together We Raise Tomorrow*, the province’s new social policy framework, and a report from Alberta’s chief medical officer of health, *Let’s Talk About the Early Years*, both of which describe the principles of “serve and return” and “toxic stress.” *Creating Connections: Alberta’s Addiction and Mental Health Strategy* is another document from the Health Ministry that unites child development with mental health and treatment for addiction—fields that don’t typically intersect. “Early experiences literally shape how the brain gets built. Just like building a house, it is step-by-step, beginning with a strong foundation, including supportive and resilient families and communities,” the document says, echoing language found in an early Council working paper. “Exposure to chronic and serious early stressors creates an

Presentations have proved an effective method of sharing the Council’s work. From left to right, Megan R. Gunnar, Nathan A. Fox, and Judy L. Cameron present on the science of early childhood in Alberta, Canada.



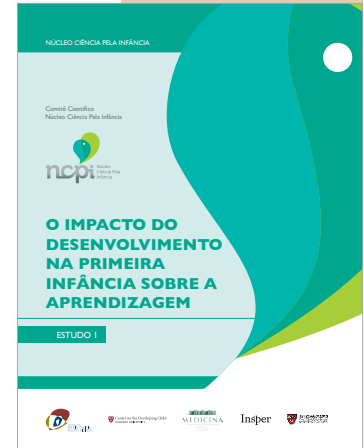


exaggerated stress response in the brain and body that, over time, may erode the solid foundation on which mental health develops.”

In Brazil, the work of the Council has also inspired a national effort to use the science of child health and development to guide stronger policies and larger investments to benefit young children and their families. Launched in 2011, Núcleo Ciência Pela Infância (NCPI) is a collaboration involving the Center on the Developing Child, the David Rockefeller Center for Latin American Studies at Harvard University, Fundação Maria Cecília Souto Vidigal, Insper (a private business school), Sabara Children’s Hospital, and the Faculty of Medicine at the University of São Paulo. Inspired by the impact of the Council in the United States, philanthropists, scholars, policymakers, and civil society leaders in Brazil are adapting the model for a Brazilian context to catalyze more effective policies and programs that will lead to a more prosperous, sustainable, and equitable society. NCPI has formed its own Scientific Forum on Early Childhood Development, a multidisciplinary group of leading academics throughout Brazil. The group’s first working paper on the science of

early learning, which was also informed by cross-cultural communications research conducted by FrameWorks, was released in November 2014.

A major impact of the Brazil work was felt in December 2014, when the Brazilian House of Representatives passed *Marco Legal*, a new policy framework for early childhood development. The legislation defines early childhood for the first time in Brazilian history and calls for the creation of a national policy on early childhood that draws on interdisciplinary knowledge. “It was not an easy job [to pass this legislation],” says Eduardo Queiroz, director and president of the Fundação Maria Cecília Souto Vidigal. “All the lobbyists from the business sector were there...they don’t yet understand how important the family is and that investment in children is important for the future of their businesses. But one of the lobbyists called after [it was all finished] and said: ‘I know that the legislators are not specialists, but you guys did a great job in giving them the knowledge to fight for the cause.’”



NCPI’s first working paper in Brazil is modeled on the Council’s publications.

## Building a Dynamic Dissemination Strategy to Meet Growing Demand

Despite the powerful impact of in-person presentations and papers—altogether, Council members typically do fifty to seventy-five presentations per year—there is a limit to how many people can be reached by a personal visit. Thus, establishing a prominent web-based presence to disseminate the science more broadly was essential, as was creating a range of communication tools beyond just working papers.

“People have different learning styles and different preferences for accessing information,” says Al Race, Deputy Director of the Center and its Director of Communications and Public Engagement. “So it’s important, if the Council is going to reach a variety of people, to tell the story of the science in a variety of formats—videos, briefs, slide shows, interactives, social media.”

Launched in 2003, the Council’s web site ([www.developingchild.net](http://www.developingchild.net)) at first provided basic information about the group and, soon thereafter, offered a few downloadable working

papers. When the Council’s administration moved with Shonkoff and Najarian from its initial home at Brandeis University’s Heller School to become a part of the new Center that Shonkoff was launching at Harvard University in 2006, the Council’s site moved with it. Now the Council’s web presence is an area within the Center’s overarching website, which features twelve working papers, four larger reports, seven briefs, twenty videos, and seven interactive features, nearly all building on the foundational science work of the Council.

With all of these formats, the Council’s attention to getting both the science and the communications right has remained paramount, no matter how difficult the task. Video productions, in particular, have required significant investments of time, money, and expertise by Council members, such as University of Pittsburgh developmental neuroscientist Judy L. Cameron, Ph.D., who has taken a special interest in the communications tools. “It took us—especially Judy Cameron, working with Al Race, others at Harvard, and a team of producers—several years to get the core concepts right in 90-second videos,” says Levitt, the Council’s science director.

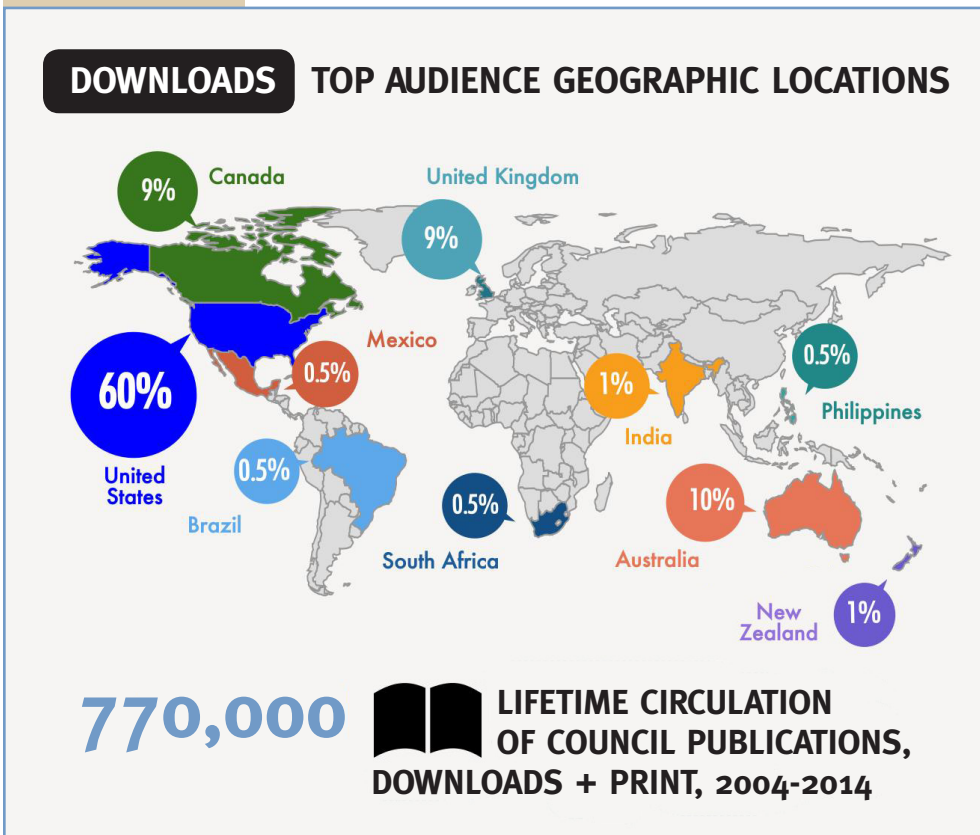
Over time, demand for the products has skyrocketed. Publications were downloaded 130,000 times in 2014 alone, as compared with about 8,000 in 2007. Some Council papers are now downloaded as much in a single month as others were in a year when the group was in its early stages. Videos were viewed over 300,000 times in 2014, up from 48,000 just three years earlier. Three short videos about the Council’s core scientific concepts—brain architecture, serve and return interaction, and toxic stress—have been especially popular, racking up a quarter of a million views in just over three years.

Requests for non-English translations of Council and Center products also continue to escalate. Thus far, nine videos, three papers, and three briefs have been translated into either Portuguese or Spanish, in collaboration with partners in Brazil, Colombia, Mexico, and at the World Bank. In addition, through a collaboration with UNICEF, one paper and four briefs were translated into the Czech, Hungarian, Romani, Romanian, and Serbian languages. “We get more requests for translating the Council’s materials than we can manage,” says Race. “What prevents us from doing more is the need to ensure that versions in other languages accurately translate both the science and the metaphors that help explain the science, some of which may not work as well in other cultures.”

The Council’s work also has enhanced the ability of the Center to maintain a website that presents “complicated science, communicated well,” Race says. Not only does using these different formats improve the Council’s ability to communicate with different audiences, but it also gives the Council members multimedia tools they can use when they give presentations.

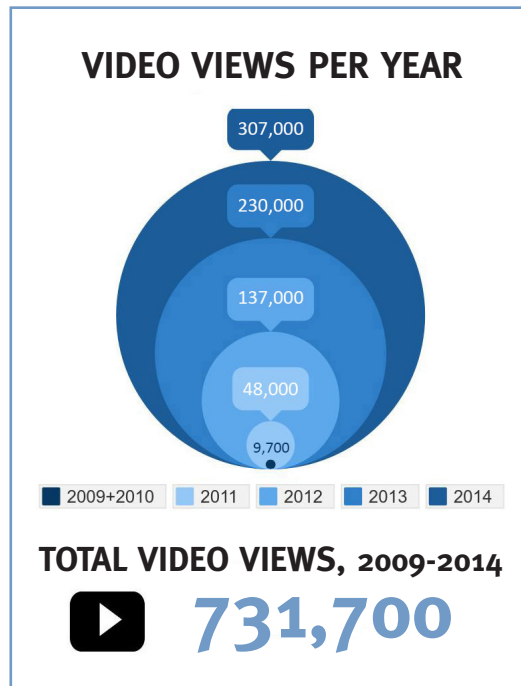
“I think our original purpose was totally realized,” says former Council member Phillips. “The Council website is really the go-to place for updates, specifically on the neurobiology of development and its implications for action.”

The Council has also continued to explore other ways of communicating science. Through a two-year collaboration with Marientina Gotsis, MFA, director of the Creative Media and Behavioral Health Center at the University of Southern California—brokered when Levitt moved to USC in 2008—highly credible scientific content was built into a series of game prototypes. One of those eventually became one of the Council’s most popular videos, a game-themed representation of the core story of development called “Brain Hero.” The video has since been translated into Spanish and Portuguese and produced with



in-country narration for Canada and the United Kingdom. Another prototype became “The Brain Architecture Game,” a board game that has been used extensively by Cameron, and others to teach the basic principles of the core story to business leaders, policymakers, students, and a range of practitioners.

Citing the notion of brain architecture as the “centerpiece” of the Council’s work, Cameron has seen the impact of this hands-on approach. In the game, which is still in the prototype stage, participants work together to construct a model of a brain out of simple materials, such as pipe cleaners and plastic straws. Throughout the game, players draw “life experience” cards, which list positive circumstances (such as language-rich environments and access to high-quality medical care) as well as negative experiences (such as poorly trained child care providers, physical abuse, and neighborhood violence). The cards dictate whether the player can use strong building materials for the structure or must hang little weights on it. The object is to end up with a stronger “brain” structure that can withstand the “adverse experiences”—or weights—the player may be dealt.



Cameron recalls one business executive who said, upon seeing his “brain” collapse, “It wasn’t a fair game! I got a lot of unlucky cards.” Cameron replied, “Isn’t that the way it happens in real life?” Just then, she saw the spark of understanding on the executive’s face.

## Creating a Process for Success

All of these resources and all of this impact did not happen by magic, of course. Indeed, the Council’s success can be attributed to the realization of a three-stage process of knowledge synthesis, translation, and communication that has developed and been refined over the past decade.

**1) Knowledge synthesis.** The first step, conducting a critical analysis and synthesis of the knowledge base at the semi-annual Council meetings, begins with invited scientific presentations and readings of cutting-edge research on a topic of interest to the Council members. This is followed by vigorous debate, in order to arrive at consensus conclusions that represent a firm foundation of current expertise.

**2) Knowledge translation.** With that synthesis—or “expert story”—in hand, the Council’s partners at the FrameWorks Institute conduct research to identify and bridge gaps in understanding between the public and the scientists.

Together, FrameWorks and the Council then develop the appropriate language that retains scientific accuracy yet can fill those gaps in understanding and lead to increased attention to and support for investment that benefits disadvantaged children.

**3) Communication in multiple forms.** The Council then must transfer the translated knowledge base to policymakers and civic leaders in a way that is accessible, effective, and useful. In addition to drawing upon partnerships with NCSL and NGA to reach the target audience, this strategy also involves the production and dissemination of a wide range of publications and

educational media via print, the web, and in-person presentations.

While the Council only meets formally every six months, its work is ongoing throughout the year. In his role as science director, Levitt leads a collaborative process with Shonkoff and Center staff. In 2010, this team crafted a multi-year agenda that identified a menu of topics in neuroscience that Council members felt needed to be addressed “at a deeper level because of what many of us are hearing in the public and policy world,” Levitt says. For example, the Council’s latest work on resilience—which is the topic of the thirteenth working paper—arose from some members being challenged by the common perception that many individuals turn out just fine in spite of traumatic circumstances or significant neglect early in life.

Once a topic has been agreed upon, Levitt has follow-up conversations with Council members to get suggestions for researchers who could engage most productively with the group.

The Council members themselves acknowledge that even their collective knowledge of a given topic is not all-encompassing. Members look forward to identifying and inviting guest presenters to bring the latest, cutting-edge science directly to the meetings. Levitt also reviews the work of prospective invitees independently—including published papers and available videos of talks—to decide how they might best fit into the agenda of a Council meeting. It’s rare, he adds, for any scientist to decline an invitation.

All working papers—as well as other products such as videos, presentation materials, interactive features, and briefs—go through the Council’s own internal peer-review process, which is as demanding as that of any top-tier scientific journal. What Shonkoff calls an “uncompromising commitment to scientific rigor” often results in a relatively slow pace of publishing materials—as long as a year and a half for a working paper

and typically longer for a short video. During this time, Council members pass drafts back and forth until everyone is satisfied with the final result. No product has ever been released from

**“Working with fellow Council members to edit a working paper is like no other experience of writing in science.”**

– Linda C. Mayes, M.D., Council Member

the Council until everyone has supported its content.

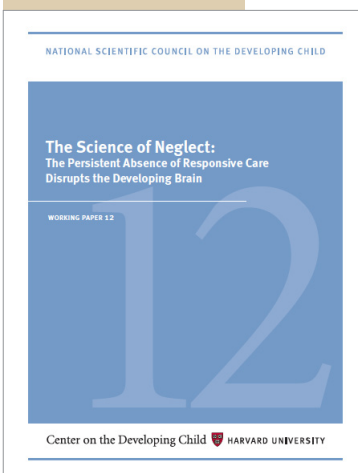
Despite the long time frame and often-spirited debate, Duncan says that it is rare for discussions at a Council meeting to become polarized because of different views on research. “Everyone is a scientist in how they think about things,” he says. “We move to the next level and ask, ‘How can we find the evidence?’”

“It is frustrating yet invigorating at the same time,” says Levitt. “In all the years of the Council’s existence, no member has lost sight of the primary goal. It has meant that no matter how long it takes, we all want to get it right and make our content as accurate, compelling, and user-friendly as possible.”

“Working with fellow Council members to edit a working paper is like no other experience of writing in science,” says Linda C. Mayes, M.D., a professor at Yale University School of Medicine. “Each of us is committed to translating the science accurately, not stepping beyond what the data tell us, and to a clear and accessible translation that is ultimately useful as a communication tool. With this shared mission, we work almost as one but at the same time learn from one another as we interpret the science and hone our messages.”

“Preparing the working paper on executive function was among the most rewarding collaborative experiences of my professional life,” says Phillips. “The fingerprints of most Council members are on that document, and it kept getting better and better as the input came in. It was a truly interdisciplinary product.”

Attendance at the Council’s working meetings is by invitation only, but FrameWorks staff, funders, and partners, such as NCSL and NGA, are regular participants. There is a detailed



An early working paper (top) and a more recent Council publication.

agenda and considerable amount of work to be completed while the members are together. Mannix says she remembers how fortunate she felt to be invited to the Council meetings and to have a glimpse into their work. “This allowed me to create more relationships with the members,” she says. “I knew I needed to get those people to Alberta.”

Representative Kagi says the presentations by scientists at the meetings were “illuminating and, in some cases, startling.” She recalls a particular Council meeting in San Francisco in 2009,

which featured a presentation about the effects that a pregnant mother’s drug addiction has on the fetal brain. The science showed that the neural pathways being developed were actually “setting that child up for later addiction and dependence,” Kagi recalls. “It was quite a revelation and reinforced for me the importance of intervening very early—hopefully early in pregnancy—to prevent extremely negative and damaging early experiences that lead to self-destructive behaviors later on. That was just one example of what a layperson can learn from a brilliant scientist.”

## A Decade of Lessons Learned

Even with the incredible energy and sense of purpose that accompanied the creation of the Council, Shonkoff initially believed the group would only have a two- to three-year run. What happened, however, was “a tidal wave of rapidly moving research,” Shonkoff says, that continues to make the Council a vital organization. Yet it has not succeeded without navigating some challenges. Across the past ten years, Council members have learned valuable lessons about how to be most effective.

### 1. IT’S ALL ABOUT THE PEOPLE

A major factor in the Council’s ongoing success is the personal bond that exists among its members. Shonkoff describes them as “just a bunch of wonderful people who love working together.”

Not only do they ultimately agree on every metaphor and statement that ends up in a working paper, but, more importantly, they display the kind of collaborative spirit that allows them to confront differences of opinion amicably. “A big part of why it works,” Cameron says, “is that we’re perfectly comfortable arguing until we do feel comfortable.”

Their desire to keep the work free of nonproductive infighting is a testament to their shared belief in the Council’s mission. Further evidence of their dedication to this work, Levitt says, is the fact that no one individual can claim “first author” status on working papers. Rather, the full Council is listed as the collective author of all papers.

“Everybody on this Council is a star in their respective research field, so there is something magical about putting aside their bragging rights,” Levitt notes. “It speaks volumes to the real commitment that Council members have.”



Council science director Pat Levitt at a 2014 Council meeting.

Of the twelve founding members, seven are still on the Council at the close of 2014. Given that every member is a successful and active academic at his or her home institution, there have been some through the years who found it difficult to put in the required time or who saw their careers taking unexpected turns that made membership more difficult or less relevant to them. It can be a balancing act, Race says, to make sure some members aren’t carrying more

weight than others and to ensure that there's the right mix of expertise in the group.

But even as new members join, the ethos of cooperation and respect remains. At a dinner during the December 2013 meeting in Washington, D.C., Shonkoff stood to toast the

**“The Council helped us refine our message and simplify it without compromising on the science.”**

– Charles A. Nelson III, Ph.D., Council Member

group. He remarked that the Council's “staying power” is demonstrated by the fact that more recent additions to the Council—such as Takao K. Hensch, Ph.D., a professor at Harvard University and Boston Children's Hospital, and University of Arizona professor Fernando D. Martinez, M.D.—have been able to “seamlessly integrate” into its mission-driven fabric.

In addition to bringing deep expertise and different perspectives to the group—and to the Center—each member can also relate the intellectual rewards he or she has reaped from being part of the Council. Another founding member, Nathan A. Fox, Ph.D., who was a member of the MacArthur Research Network and is currently a professor and director of the Child Development Lab at the University of Maryland, says the Council provides a vehicle and an infrastructure for communicating the science of early brain development to the public—something he would not have had the time or resources to accomplish on his own.

“First,” Fox says, “partnering with FrameWorks, the Council has provided hands-on teaching of how to communicate during media interviews. This also applies to professional presentations to nonacademic government or policy audiences. Second, working directly with FrameWorks and on Council working papers, I have changed the way I write for policy and the translation of scientific evidence. Third, the Council has identified areas—from stress, to genetics, to resilience—that are in need of review and in-depth critique and that are important for the translation of science to public policy.”

Being part of the Council, Nelson says, has enhanced his ability to communicate important findings about the effects of profound neglect on brain development to policymakers—both in the U.S. and in other countries where placing orphaned, abandoned, and abused children in institutions is still a common practice. Nelson and Fox are co-principal investigators of the Bucharest Early Intervention Project (BEIP), a study launched by the MacArthur Network that is investigating the impact of providing foster care to children who had been living in institutions in Romania. The study has helped inform the Council's work on the importance of nurturing relationships early in life and the harmful effects of neglect.

“BEIP was an emotionally charged project for some people,” says Nelson. “We were dealing with orphans, after all, children who were abandoned to institutions. Everyone had seen the images on TV. The Council helped us refine our message and simplify it without compromising on the science—particularly the message that children removed from institutional care in the first two years of life had better outcomes than those removed after this. I also think it sensitized us to how to frame some of the findings, notably brain images, some of which showed profound differences, without sending the message that these children had irreversibly ‘damaged’ brains.”

As a professor and head of a world-renowned laboratory of neuroendocrinology at The Rockefeller University in New York, Council member Bruce S. McEwen, Ph.D., is far removed from policy issues in his day-to-day work. But his research on how the brain and the body interact, and specifically on how stress affects that interaction—known in the scientific world as “allostatic load,” a concept that McEwen and his colleagues pioneered—has both *affected* and *been affected* by the Council's work. “Being a member of the Council has not only enriched what we do in the lab,” he says, “but has enabled me to continue a separate ‘career’ of collaborative work on applications of the concept of allostatic load.”

One of those collaborations is with his brother, Craig, a sociologist at Bowdoin College in Maine, to apply scientific understanding of how poverty and disadvantage “get under the skin” throughout the lifespan, particularly early in life, and affect physical and mental health. Working with the United Way and pediatricians in mid-coast Maine, the McEwens have connected the

biological and social sciences to find ways to educate parents and policymakers about how they can enhance the lives of children and families.

As someone who conducts cost-benefit analyses of early childhood programs, Duncan considers himself a “bystander” when it comes to neuroscience as well as an occasional “naysayer” in conversations related to policy implications. In other words, he represents exactly the kind of balance and diversity that has allowed the Council’s work to resonate with so many people, regardless of their political views, professional positions, or past experiences. Duncan describes being a member as “a real treat. It’s what academics live for.”

“It was an honor to be invited to join the Council and spend time with scholars whose work I admired and followed closely,” agrees Mayes. “We work hard to close the gap between scientific discovery and real-world impact and, in our case, real-world impact for the thousands upon thousands of children in need. In the end, it is this mission, shared by each of us on the Council, that makes it a privilege to be in this group.”

## 2. BE TRUE TO THE SCIENCE

The Council is a powerful example of a group that understands its distinctive niche and hasn’t tried to expand into other activities where it might not be as effective. For example, in addition to being asked to provide speakers at gatherings of policymakers, civic and business leaders, service providers and comparable audiences, the Council was also being sought out early on to respond to controversial political issues related to early childhood policy. Its members were firm, however, that this was not a role they felt comfortable taking on.

“I made a solemn pledge to the original members that we would never get involved in anything that looked like partisan politics,” Shonkoff recalls. Najarian adds, “They wanted to remain true to the science. We couldn’t be seen as advocates.”

There were other areas into which the Council decided not to venture. It wasn’t designed to be a “rapid response” organization, and the members were not interested in changing that. For example, they decided it wasn’t their role to comment on the latest preschool study or to make specific recommendations for how states should spend their education or health dollars. Yet, the

more successful they were in making the case for investment in early childhood, the more they found themselves being asked to recommend specific programs and policies.

Rather than stray from (or add to) the Council’s original core areas of expertise—neuroscience, molecular biology, developmental psychology, medicine, and economics—the group recommended the formation of a separate group to answer these “application” questions. In 2006, the Harvard Center launched the National Forum on Early Childhood Program Evaluation (which was later renamed the National Forum on Early Childhood Policy and Programs) as a companion organization (see sidebar). Where

## NATIONAL FORUM ON EARLY CHILDHOOD POLICY AND PROGRAMS

The scientists in the Council participate because of their motivation to see important research used to inform sound policy and practice affecting young children. However, they do not feel that their expertise lends itself to recommending specific actions, policy decisions, or responses to controversies over the latest studies.

To fill the need for expertise in intervention science, the National Forum on Early Childhood Policy and Programs was formed in 2006. Just as the Council has focused on *why* it is important to invest in children’s early years, the Forum (initially named the National Forum on Early Childhood Program Evaluation until 2010) uses program evaluation research to answer questions about *what* we know about the impacts of programs and policies, *how* we should invest limited resources, and *when* we should intervene.

The groups operate independently, although they have collaborated on some papers to incorporate both biological and program evaluation knowledge. The Forum has devoted significant attention to the creation of a meta-analytic database of program evaluation studies dating back to the 1960s, and created a “decision makers’ guide” focusing on five key questions that should be asked when trying to determine if a study is sound and useful:

- Is the evaluation design strong enough to produce trustworthy evidence?
- What services were actually received by participating children and families and comparison groups?
- How much impact did the program have?
- Do the program’s benefits exceed its costs?
- How similar are the programs, children, and families in the study to those in your constituency or community?

Current Forum members include Jack P. Shonkoff, M.D., Greg J. Duncan, Ph.D., Philip A. Fisher, Ph.D., Katherine Magnuson, Ph.D., and Hirokazu Yoshikawa, Ph.D. For the three Council members who also serve on Forum, these dual roles allow them to maintain a focus on translating the science while also addressing their interest in how well the science is applied.

the Council was eager to answer the “why” question—why early childhood is important—the Forum was designed to help answer “what” we should do and “how” we should do it.

Council members also quickly learned from their policy advisors and partners that they were not expected to make specific policy recommendations based on the science. Kagi, Clothier, and others assured them that what policymakers needed from the Council was credible and accurate science, communicated in ways that they could understand. The policymakers would then know what to do with it.

A good example is Washington state’s adoption of an evidence-based home visiting program in 2010. When the bill hit opposition in the legislature, Levitt visited the state capital in Olympia and spoke to a group of eighteen legislators from both political parties about early brain development

and the importance of early relationships. “The science helped legislators understand the importance and the impact of the science,” recalls Kagi. The bill passed with bipartisan support.

There are many organizations that gather and disseminate information on early childhood and work to improve outcomes for young children, but Shonkoff suggests that what sets the Council apart is that its members have consistently

steered away from taking sides in partisan debates. Carving out a distinctive niche as “knowledge brokers” who stay focused on the science—and not the politics—is a lesson that can be useful to other researchers interested in this type of policy role.

That said, staying mission-focused does not mean being stuck in place. Recently, Shonkoff and other members of the Council have become more focused on thinking about how science can not only inform current policy but also be a catalyst for developing new ideas that have the potential to achieve breakthrough outcomes for children facing adversity. This work is being

driven by the Center’s Frontiers of Innovation (FOI) initiative, which was launched in 2011 and brings together researchers, practitioners, and policymakers to develop creative new prevention and intervention strategies for disadvantaged young children and their families.

“The confluence of the Council, the Forum, and Frontiers of Innovation represent a kind of ‘perfect storm’ for synergizing innovative approaches to prevention and intervention,” notes Council member Philip A. Fisher, Ph.D., who is a professor at the University of Oregon and a senior research scientist at the Oregon Social Learning Center. Fisher is also a member of the Forum, for which he served as Science Director from 2010-13.

Fisher’s work involves the development of interventions that leverage emerging scientific understanding about neural plasticity to improve outcomes for highly vulnerable populations such as young children in foster care. “We are making progress in areas in which the field has largely been at a plateau in recent years,” he says, “and are making great strides toward low-cost and efficient approaches to improving adult and child executive functioning, which has direct bearing on academic, economic, and mental health outcomes.” These initiatives provide Fisher and other members of the Council with the opportunity to bridge the worlds of translating complex science, evaluating targeted interventions, and testing new ideas in policy and practice in collaboration with some of the best and most forward-thinking community service agencies across the country.

Another Council member who is actively participating in FOI is Silvia Bunge, who is director of the Building Blocks of Cognition Laboratory and an associate professor at the University of California, Berkeley. Her laboratory examines developmental changes and neural plasticity in cognitive control and reasoning skills in healthy and neurologically impaired children and adults and seeks to better understand both negative and positive environmental influences on brain and cognitive development. Bunge saw FOI as an opportunity to develop and test new strategies in line with her work. She is currently collaborating with Childhaven, a Washington state provider of early care and education for young children affected by trauma, to co-design, refine, and implement a learning-through-play intervention focused on building the foundations of reasoning and self-regulation skills.



Council member Philip A. Fisher presents in Alberta, Canada.



### 3. PRACTICE FRAMING, WITH PATIENCE AND FLEXIBILITY

It has taken considerable time, effort, and practice for Council scientists to become comfortable using the communications research findings publicly. After all, scientists are not trained in, nor rewarded for, public communication. Only a subset of members makes frequent presentations to nonscientific audiences, and they have varying degrees of comfort using the metaphors and framing recommended by FrameWorks. Likewise, some metaphors feel more natural and successful to the scientists than others.



Council member Charles A. Nelson III presents to Brazilian policymakers.

Their comfort level increases with their understanding that the research is designed to inform their communication, not restrict it; that it provides tools, not a script; and that they are free to choose and adapt the elements that are most comfortable to them.

“As Council members grow to see FrameWorks’ input as differentiated from ‘spin’ and messaging by its fidelity to the science that is being translated,” Bales observes, “they tend to become more adventurous in experimenting with the recommendations.” Bales recalls clearly when Shonkoff phoned her from Australia several years ago to say that he had finally found his voice in framing the science. On a radio interview show, he was able to anticipate the questions and prepare himself with good translated responses. “It was,” Bales recalls, “a breakthrough moment.”

Many of the Council members recall how uneasy they were initially about moving in the direction of having complex scientific principles captured in a few words, even though they were committed to seeing research have an influence on policy and practice. “I felt my integrity was at stake,” explains Nelson.

Cameron says she initially struggled with the term “toxic stress,” because she suspected that

people misinterpreted it to think that stressful experiences on their own are toxic, as opposed to the body’s *response* to those experiences. But, for her part, Gunnar says she doesn’t encounter that problem as long as she explains how it’s the absence of supportive relationships that defines “toxic stress” in comparison to the other two levels of stress in the taxonomy.

“Over time, Council members have learned that frames are not ‘magic words’ that you wave in front of people,” says Bales, “but, rather, strong conceptual frameworks that allow people to com-

pare things they know about with things they don’t understand. When Megan Gunnar helps them see what differentiates toxic from tolerable stress, she literally overcomes their default response and gets them to think in a new way.”

Bales remembers that Cameron was also initially unsure about using the term “serve and return”—a way of describing what developmental psychologists call contingent reciprocity, or the mutually responsive interactions between children and caregivers that build neural connections. After using the metaphor in one particular presentation, however, Cameron saw that it was the term that most stuck with the audience members, and she has been a convert ever since.

The Council has also had an impact on the FrameWorks Institute by pushing Bales, her research director, Nat Kendall-Taylor, Ph.D., and their team to constantly improve their process of testing, analyzing, and refining metaphors. As the research methods have improved, Bales feels confident that the words that rise to the top after extensive qualitative and quantitative research methods will take “the conversation in the direction the scientists want,” while still remaining true to the science.

As difficult as it may be for some of them, Council members have been willing students of the communications research over the years. Because it is not a skill that they use in their work every day, opportunities to practice are valued, even for those who have been involved for a full decade. At the December 2013 Council meeting, FrameWorks provided members with intensive practice in “framing” the accumulating science behind the core story. Veteran members used the training to refresh their skills, but for newer members, it was a tutorial necessary for better understanding and contributing to the Council’s work.

Cameron and Gunnar both say that, even though they work in different fields, they are easily able to weave the metaphors into the presentations they give to various audiences. In general, these phrases have enabled Council members to communicate their message to a diversity of target groups and to make the science particularly accessible to policymakers

**“Other scientific groups could learn from what the Council has done by taking the communications research seriously.”**

– Susan Nall Bales, founder and president of the FrameWorks Institute

and other influential constituencies. Over time, they have learned that FrameWorks’ approach simply allows them to open “cognitive doors” so more people can understand what scientists are learning.

“The Council is far ahead of the curve,” Bales observes. “There are many other scientific groups that could learn from what the Council has done by taking the communications research seriously and integrating it into their public presentation of science.”

#### **4. DON’T UNDERESTIMATE THE NEED FOR AN INFRASTRUCTURE**

As the Council’s activities and influence grew early on, it became clear that it needed more day-to-day management. In 2005, while still at Brandeis, Shonkoff asked Najarian (who was the

associate dean of The Heller School at the time) to become the Council’s executive director.

“He realized there was a lot of energy from the group,” she says. “But he needed someone who could wake up and think about it every day.”

Initially, Najarian focused on building an infrastructure for the Council that would allow it to be more than just a convening vehicle for its members. This started with creating a website where viewers could learn about the science, further developing relationships with partner organizations, and securing additional funding to support ongoing activities.

The Council’s birth was supported by funds from the John D. and Catherine T. MacArthur Foundation and the Johnson & Johnson Pediatric Institute. Other early funders included the Ewing Marion Kauffman Foundation, the Susan A. Buffett Foundation, and the Buffett Early Childhood Fund (which was established shortly before *From Neurons to Neighborhoods* was published and remains the Council’s longest-standing investor). Over the ensuing years, additional grant support has been provided by the Alliance for Early Success (formerly called the Birth to Five Policy Alliance), the Palix Foundation, the Pierre and Pamela Omidyar Fund, Casey Family Programs, and the Doris Duke Charitable Foundation. Because the Council’s work is aligned so closely with other activities at the Center, some current investors have begun to provide increasingly flexible funding to facilitate complementary and mutually beneficial activities.

In 2006, a few years after the Council was created, Shonkoff and Najarian founded the Center on the Developing Child at Harvard, with the Council serving as one of its signature activities. Because it had already established itself as an independent group and its members represented other universities, there was considerable discussion over how to ensure that the Council did not lose its identity and become just one of several initiatives at the Harvard Center.

Ultimately, the way the Council operates hasn’t changed, but the Center has provided a more stable infrastructure within which to work with Council members to achieve their ambitious goals. While no Center staff member is assigned to the Council full time, there are at least eight people who attend to various Council activities. These include meeting planning, strategic planning, editing and publication production,

multimedia production, fielding presentation requests, supporting Council presentations, maintaining the website and email newsletter, managing the communications research agenda, fundraising, and financial management.

Some observers might view its connection to Harvard as a reason why the Council has been so successful. Yet, because the Council predates Shonkoff's arrival at Harvard and retains its own identity as a multi-university panel, the Harvard affiliation hasn't changed the group. Levitt says Shonkoff could have easily replaced Council members with Harvard faculty members, but Shonkoff counters that there was no reason to change a dynamic and a structure that worked well. "The Harvard brand certainly hasn't hurt the Council," he says, "but it didn't need the brand to succeed."

## 5. BE A CONTRIBUTING PIECE OF A LARGER LANDSCAPE

From the beginning, the Council recognized that it was part of a nationwide environment of organizations and individuals working to advance knowledge about the early years and to improve supports for young children and their families. This larger landscape includes other scientists as well as a diversity of advocates and policy groups, and its current momentum is not the result of just one or two players. "It's hard to know what's the chicken and what's the egg," says Joan Lombardi, who has worked on early childhood issues for Presidents Carter, Clinton, and Obama. "It was totally fertile ground."

Lombardi, who was the first commissioner of the federal Child Care Bureau and later served as deputy assistant secretary for early childhood development, both within the U.S.

Department of Health and Human Services, was also the founding chair of the Birth to Five Policy Alliance and is now an advisor to foundations, including the Buffet Early Childhood Fund. Having been a major force in the last decade's momentum-building around early childhood issues, Lombardi thinks that the Council's work with FrameWorks has provided the "right words" to communicate the science and "helped people see what we're talking about." But she recognizes—as do Council members—that grassroots advocacy groups have played a critical role in improving both access and the quality of programs for young children.

Klein, the Alliance for Early Success executive director, elaborates on how all of those pieces have fit together. "Making the science clearly understood has been a boon for advocates of all types, including business, civic, health, and education leaders," she says. "The advocates the Alliance for Early Success supports in twenty-three states rely on Council materials to make the case for supporting early childhood. But the fact that too many vulnerable kids aren't reaching their full potential means there's plenty more work to be done."

The Council complements the advocacy community, and both share the ultimate goal of improving outcomes for young children facing adversity, says Rasmussen, of the Buffett Early Childhood Fund. "The Council has never stretched the truth" in order to support specific changes in policy, she says, and, in some ways it has given the work of many advocates more credibility. "This group holds you accountable for the science," she says. "I deeply appreciate how committed they are to being accurate in what they are saying."

## Looking Ahead

Despite the success of the Council and many other organizations in building broader public awareness of the importance of the early years, the job is hardly finished. With continuous policymaker turnover due to term limits and political cycles, there is always a need for educating newly elected officials.

With so much of the current policy focus on pre-K programs for 4-year-olds, the critical importance of protecting infants and toddlers from the consequences of toxic stress requires greater

attention. And, as Council and Forum members have increasingly noted, continuing—and in some cases growing—disparities in learning, behavior, and health shine a bright light on the

need for new approaches that will produce far greater effects than existing efforts on the lives of children facing adversity.

As the Council members have been discussing where they should go in the next ten years, the forward-thinking agenda of Frontiers of Innovation is playing an important catalytic role. As Shonkoff explains, the Council has spent a decade translating science to answer the “why should I invest” question in order to create a more favorable climate for addressing

**“The science is not only driving policy, it is changing everyday interactions between children and families.”**

**– Washington State Representative Ruth Kagi**

the needs of young children and their families. Now, he says, “We want to take on the ‘what’s next’ question and create a climate that supports science-based innovation in the quest for far greater impacts.”

Shonkoff sees this desire for larger effects as a logical product of the Council’s success in generating stronger endorsement across the political spectrum for investment in young children. “As early childhood policies secure broader support, the frontiers of science should be driving the development of new strategies,” he observes, “and new strategies should be producing substantially larger impacts than current best practices.”

“As a result of FOI,” says Kagi, the Washington state representative, “the science is now understood and being integrated into the assessment and response to children and families by social workers, child care providers, teachers, health care workers and many other professionals and others across Washington state. That, to me, is the most important and lasting impact of this work. The science is not only driving policy, it is changing everyday interactions between children and families, and the people responsible for helping them. It is a very powerful tool.”

Some believe that the Council’s track record, and the credibility the members have earned, has put the group in a strong position to move policymakers and practitioners toward fresh

thinking informed by scientific concepts and new strategies that can reach more vulnerable children. “The goal should be to go further to reduce disparities in health and school performance than what is currently being done,” says Levitt. Nelson adds, “I think it’s perfectly fine to take some risks now.”

The Council is also beginning to think about preparing the next generation of science communicators. Cameron, Levitt, and Shonkoff, for instance, have already incorporated what they’ve learned from the Council and FrameWorks into the courses they teach, so that a cadre of future scientists will think early in their careers about how to communicate with the public and discuss policy implications. “I find that both undergraduate and graduate students are hungry for understanding how science can make a real difference in the lives of people,” says Levitt. “They see themselves being part of such future efforts, something that I never would have imagined for myself when I was a student.”

Traditionally, universities haven’t considered communicating with policymakers or writing papers for nonacademic audiences as a standard part of one’s “academic productivity,” Fox explains. But the Council members say they are beginning to see a shift in how these activities are viewed, as well as new opportunities for researchers to become engaged in the policymaking process. “The academic enterprise has not, in general, rewarded scientists who work in the policy arena,” says Fox. “However, by staying true to the science and addressing important areas where neuroscience and developmental science can contribute to policy discussion, the Council has created a venue for scientists and academics to bring their expertise to the policy table.”

“For those of us who have stuck it out, there is this nagging feeling of not wanting to be completely archival,” Levitt says. “It’s about doing something so people know that science matters.”

For Shonkoff, the need to move from “why” to “what’s next” is critical. Without minimizing the continuing need for enhancing the basic scientific literacy of influential decision makers, he views the Council as “uniquely positioned to spearhead a new era in early childhood investment.” Driven by 21st-century scientific thinking, the Council is, Shonkoff says, “committed to nothing less than breakthrough outcomes for young children whose needs are not being met by existing policies and programs.” ●

## Legislative Working Group (2005-2006)

### LEGISLATORS

**Senator Bernest H. Cain, Jr. (D)**  
Oklahoma Senate

**Representative Elizabeth Coulson (R)**  
Illinois House of Representatives

**Senator Robert W. Hayes, Jr. (R)**  
South Carolina Senate

**Representative Peter J. Hershberger (R)**  
Arizona House of Representatives

**Representative Ruth Kagi (D)**  
Washington House of Representatives

**Representative Steven Kestel (R)**  
Wisconsin House of Representatives

**Representative Melvin J. Neufeld (R)**  
Kansas House of Representatives

**Senator Ron Raikes (I)**  
Nebraska Senate

**Representative Marie St. Fleur (D)**  
Massachusetts House of Representatives

### SCIENTISTS

**Judy L. Cameron, Ph.D.**  
Research Scientist,  
Oregon Regional Primate Research Center

**Pat Levitt, Ph.D.**  
Annette Schaffer Eskind Chair and  
Director,  
Vanderbilt University

**Deborah A. Phillips, Ph.D.**  
Professor of Psychology and Associated  
Faculty in the Public Institute,  
Co-Director, University Research Center  
on Children in the U.S.,  
Georgetown University

**Jack P. Shonkoff, M.D.**  
Samuel F. and Rose B. Gingold  
Professor of Human Development and  
Social Policy and Dean,  
Heller School for Social Policy and  
Management, Brandeis University

**Ross A. Thompson, Ph.D**  
Professor, Department of Psychology,  
University of California, Davis

*\* Note: All titles apply only for the dates listed.*

## Working Group on Early Childhood Science and Policy (2007-2008)

**Deborah Barnett**  
Deputy Secretary,  
South Dakota Department of Education

**Representative Cecil Brown (D)**  
Mississippi House of Representatives

**Representative Mele Carroll (D)**  
Hawaii House of Representatives

**Janice Gruendel**  
Connecticut Governor's Senior Policy Advisor,  
Children and Youth  
Co-Chair, Early Childhood Education Cabinet

**Jacqueline Jones**  
Assistant Commissioner,  
Division of Early Childhood Education,  
New Jersey Department of Education

**Representative Ruth Kagi (D)**  
Washington House of Representatives

**Speaker Melvin J. Neufeld (R)**  
Kansas House of Representatives

**Assemblyman Felix Ortiz (D)**  
New York Assembly

**Representative Greg Porter (D)**  
Indiana General Assembly

**Holly Robinson**  
Commissioner,  
Bright from the Start,  
Department of Early Care and Learning  
Georgia

*\* Note: All titles apply only for the dates listed.*

## STATE DELEGATIONS

# National Symposium on Early Childhood Science and Policy, June 26-27, 2008

### ARKANSAS

**Representative Nancy D. Blount (D)**

Arkansas House of Representatives

**Senator Shane Broadway (D)**

Arkansas Senate

**Representative Eddie Cheatham (D)**

Arkansas House of Representatives

**LeRoy Dangeau**

Executive Director, Cross County Chamber of Commerce and Economic Development Corporation

**Kathryn Hazelett**

Director of Policy, Office of the Governor

**Steven B. Jones**

Deputy Director, Arkansas Department of Human Services

**Emily Jordan-Cox**

Deputy Director of Policy, Office of the Governor

**Tonya Russell**

Director, Division of Child Care and Early Childhood Education, Arkansas Department of Human Services

### COLORADO

**Bruce Atchison**

Chief of Staff, Office of the Lieutenant Governor

**Karen Beye**

Executive Director, Colorado Department of Human Services

**Jeanette Cornier**

Assistant Commissioner, Colorado Department of Education

**Senator Peter Groff (D)**

President, Colorado Senate

**Elsa Holguin**

Senior Program Officer, Child and Family Development, Rose Community Foundation

**Kristie Kauertz**

Early Childhood/P-3 Policy Director, Office of the Lieutenant Governor

**Representative Tom Massie (R)**

Colorado House of Representatives

**Zack Neumeyer**

Chairman, Colorado Succeeds

**The Honorable Barbara O'Brien (D)**

Lieutenant Governor, State of Colorado

### CONNECTICUT

**Janice Gruendel**

Governor's Senior Policy Advisor, Children and Youth, Co-Chair, Early Childhood Education Cabinet

**Kathleen S. Guay**

Director, Fiscal and Program Policy Section, Office of Policy and Management

**Representative DebraLee Hovey (R)**

Connecticut House of Representatives

**The Honorable Christine Keller**

Judge of the Connecticut Superior Court

**David Nee**

Executive Director, William Caspar Graustein Memorial Fund

**Charlene Russell-Tucker**

Associate Commissioner, Connecticut Department of Education

**Vincent Siberon**

Executive Director, ASPIRA of Connecticut

**Representative Diana Urban (D)**

Connecticut House of Representatives

### ILLINOIS

**Representative Barbara Flynn Currie (D)**

House Majority Leader, Illinois House of Representatives

**Kelly King Dibble**

Senior Vice President and Director of Public Affairs & Government Relations, The Northern Trust Company

**Senator Don Harmon (D)**

Illinois Senate

**Christopher A. Koch**

Superintendent, Illinois Board of Education

**Representative Jerry Mitchell (R)**

Illinois House of Representatives

**Elliot M. Regenstein**

Partner, EducationCounsel LLC

**Jerome Stermer**

President, Voices for Illinois Children

**Maria Whelan**

President & CEO, Illinois Action for Children

### KANSAS

**Barry Downing**

President & CEO, Northrock, Inc.

**Representative Richard Kelsey (R)**

Kansas House of Representatives

**Lisa G. Klein**

Director of Early Childhood Initiatives, Kansas Health Institute

**Alexa Posny**

Commissioner, Kansas Department of Education

**James Redmon**

Executive Director, Kansas Children's Cabinet and Trust Fund

**Senator Jean Schodorf (D)**

Kansas Senate

**Kate Wolff**

Deputy Director of Governmental Affairs, Office of the Governor

### LOUISIANA

**Danny Bell**

Superintendent, Lincoln Parish School Board

**Erin Bendily**

Education Policy Advisor, Office of the Governor

**Representative Hollis Downs (R)**

Louisiana House of Representatives

**Janie Humphries**

McGehee Professor of Early Childhood Development, Louisiana Tech University

**Linda Johnson**

President, Louisiana Board of Elementary and Secondary Education

**Senator Ben Nevers (D)**

Louisiana Senate

**Joe Salter**

Director of Governmental Affairs, Louisiana Department of Education

**Representative Don Trahan (R)**

Louisiana House of Representatives

**Ann Silverberg Williamson**

Secretary, Louisiana Department of Social Services

\* Note: All titles apply only for the dates listed.

**MICHIGAN**

**Joan Blough**  
Vice President,  
Early Childhood  
Investment Corporation

**Richard Blouse**  
President & CEO,  
Detroit Regional Chamber

**Susan Broman**  
Executive Director,  
Steelcase Foundation

**Dan Krichbaum**  
Chief Operating Officer,  
Office of the Governor

**Douglas Luciani**  
President & CEO,  
Traverse City Area  
Chamber of Commerce

**Alyssa R. Martina**  
Publisher,  
Metro Parenting Publishing

**MISSOURI**

**Karen Bartz**  
Chair,  
Coordinating Board for  
Early Childhood

**Senator Rita Heard Days  
(D)**  
Missouri Senate

**Representative Jeff  
Grisamore (R)**  
Missouri House of  
Representatives

**Stan Johnson**  
Assistant Commissioner,  
Missouri Department of  
Elementary and Secondary  
Education

**Paula F. Nickelson**  
Preventive Services  
Coordinator,  
Missouri Department of  
Health and Senior Services

**Deborah E. Scott**  
Director,  
Missouri Department of  
Social Services

**Susan Stepleton**  
President & CEO,  
Parents as Teachers  
National Center

**Thomas Watkins**  
Attorney at Law

**OHIO**

**Liz Connolly**  
Deputy Chief of Staff,  
Ohio Senate

**Marcia Egbert**  
Senior Program Officer,  
The George Gund  
Foundation

**Robin Harris**  
Executive Assistant  
for Health and Human  
Services,  
Office of the Governor

**Alvin D. Jackson**  
Director,  
Ohio Department of Health

**Alicia Leatherman**  
Director,  
Governor's Early Childhood  
Cabinet

**Representative Vernon  
Sykes (D)**  
Ohio House of  
Representatives

**Gayle Channing Tenen-  
baum**  
Legislative Director,  
Public Children Services  
Association

**Susan Zelman**  
Superintendent of Public  
Instruction,  
Ohio Department of  
Education

**OREGON**

**Richard Alexander**  
Chair,  
Ready for School Institute

**Representative Sara  
Gelser (D)**  
Oregon House of  
Representatives

**Erinn Kelley-Siel**  
Human Services Policy  
Advisor,  
Office of the Governor

**Representative Tina Kotek  
(D)**  
Oregon House of  
Representatives

**Representative Carolyn  
Tomei (D)**  
Oregon House of  
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