

From Best Practices to Breakthrough Impacts

A science-based approach to building a more promising future for young children and families

KEY FINDINGS FROM THE REPORT

EARLY CHILDHOOD IS A TIME OF GREAT PROMISE AND RAPID CHANGE, WHEN THE ARCHITECTURE OF the developing brain is most open to the influences of relationships and experiences. Yet significant disadvantages in the life circumstances of young children can undermine their development, limit their future economic and social mobility, and thus threaten the vitality, productivity, and sustainability of an entire society. A remarkable expansion of new knowledge about brain development in the early years of life, linked to advances in the behavioral and social sciences, is now giving us deeper insights into *how* early experiences are built into our bodies, with lasting impacts on learning, behavior, and both physical and mental health. Decades of research offer insights into the best practices that we know can make a difference for children, but to reach greater impacts, we must apply today's knowledge from science and practice to fuel new ideas for tomorrow. Only then can we truly capitalize on the promise of the early years and achieve breakthrough solutions to some of the most complex challenges facing parents, communities, and nations.

The Science of Early Childhood Development

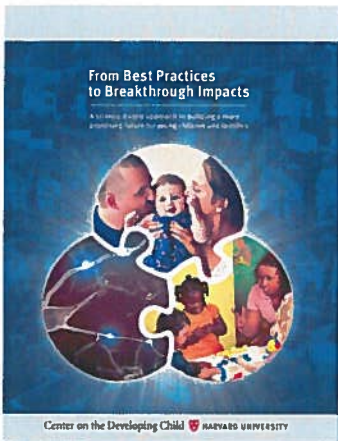
The following core concepts are grounded in decades of behavioral and social sciences and recent discoveries in neuroscience, molecular biology, and epigenetics. Together they help explain how healthy development happens, how it can be derailed, and what we can do to restore it (or, even better, prevent it from getting off track).

Responsive Relationships and Positive Experiences Build Strong Brain Architecture

- **The foundations of brain architecture are constructed early in life.** The neural connections that comprise the structure of the developing brain are formed through an ongoing process that begins before birth, continues into adulthood, and establishes either a sturdy or weak foundation for all the health, learning, and behavior that follow.
- **The interaction of genes and experiences shapes the circuitry of the developing brain.** The experiences children have early in life not only influence their developing brain architecture, but also affect how

genes are turned on and off and even whether some are expressed at all.

- **Children develop within an environment of relationships that begins in the family but also involves other adults who play important roles in their lives.** This can include extended family members, providers of early care and education, nurses, social workers, coaches, and neighbors.
- **Skill begets skill as brains are built from the bottom up, with increasingly complex circuits building on simpler circuits.** The gradual acquisition of higher-level skills, including the ability to focus and sustain attention, set goals, follow rules, solve problems, and control impulses, is driven by the development of the prefrontal cortex (the large part of the brain behind the forehead) from infancy into early adulthood.
- **The brain's many functions operate in a richly coordinated fashion with multiple systems throughout the body.**



For the full *From Best Practices to Breakthrough Impacts* report, visit: <http://developingchild.harvard.edu/resources/from-best-practices-to-breakthrough-impacts/>

Cognitive, emotional, and social capacities are highly interrelated, and the circuitry that affects learning and behavior is interconnected with physiological systems that affect physical and mental health.

Adversity Disrupts the Foundations of Learning, Behavior, and Health

- **Toxic stress responses can impair development, with lifelong consequences.** Learning how to cope with adversity is an important part of healthy child development, and short-lived activation of a young child's stress response systems helps build adaptive responses while supportive relationships help restore the physiological reactions to baseline. If buffering protection from a caring adult is not available and stress responses are extreme and long-lasting, excessive activation can have a toxic effect on developing brain architecture and other maturing biological systems.
- **Any child who experiences prolonged adversity is at risk for physical and mental health problems, and individuals who are more vulnerable to stress are even more likely to experience long-term impacts.** Early exposure to child abuse or neglect, family turmoil, neighborhood violence, extreme poverty, racial discrimination, or other hardships can prime biological systems to become hyper-responsive to adversity. Stress-inducing experiences such as these early in life, particularly for children who are genetically more vulnerable to adverse environments, are associated with increased risk of lifelong physical and mental health problems, including major depression, addictions, heart disease, and diabetes.

Protective Factors in the Early Years Strengthen Resilience

- **Providing the right ingredients for healthy development from the start produces better outcomes than trying to fix problems later.** Scientists use the term “plasticity” to refer to the capacity of the brain to learn from experience, which is greatest early in life and decreases with age. Although windows of opportunity remain open for many years, trying to change behavior or build new skills on a foundation of brain circuits that were not wired properly from the beginning requires more effort— for both individuals and society.
- **Positive early experiences, support from adults, and the development of adaptive skills can counterbalance the lifelong consequences of adversity.** Children who have overcome hardships almost always have had at least one stable and responsive relationship with a parent, caregiver, or other adult who provided vital support and helped them build effective coping skills.
- **Both children and adults need a set of core capabilities to respond to or avoid adversity, and these capacities can be strengthened through coaching and practice.** *Self-regulation* helps us to draw on the right skills at the right time, respond effectively to the world around us, and resist inappropriate responses. *Executive function* includes the ability to focus and sustain attention, set goals, follow rules, solve problems, and delay gratification. Overcoming the effects of adversity on the development and use of these capabilities requires attention to *both* reducing sources of significant stress *and* actively building skills.

Lessons Learned from Five Decades of Program Evaluation Research

The current early childhood landscape includes a diverse array of policies and services designed to strengthen families' ability to support the healthy development of their children. These include Head Start/Early Head Start, primary health care, preschool, child care, home visiting, food assistance, financial supports, and services for children with special needs. Fifty years of program evaluation have produced extensive evidence of positive impacts overall, yet limited data on scalable “best programs.” Nevertheless, it is possible to identify five key characteristics that have been associated consistently with positive outcomes across a range of ages and interventions.

1

Build Caregiver Skills

Adults who care for young children—whether they are parents, relatives, friends, or staff in early childhood programs—need both capabilities and knowledge to support healthy child development. Caregivers who struggle with the serious, daily stresses of low-wage jobs, community or family violence, and/or chaotic home environments often require additional support and opportunities to strengthen the skills that are essential for providing the stability and responsiveness that young children need.

Home-visiting services that support parents, professional development for teachers and caregivers, and efforts to engage parents in center-based, child-focused programs are all most effective when they actively and intensively help adults acquire and practice capabilities that are linked to explicit child outcomes. Adequate compensation is critical for recruiting and retaining a skilled early childhood workforce that is prepared to meet the needs of both children and parents.

2 Match Interventions to Sources of Significant Stress

The ultimate strategy for preventing the negative effects of stress on the largest number of people would be to reduce poverty, violence, discrimination, and other threats to child well-being as a societal goal. When interventions are implemented at the individual level, greater impacts are more likely when services focus on explicit needs, promote warm and responsive caregiving, and strengthen the ability of parents and other adults to scaffold the development of young children's adaptive capabilities. Research shows that:

- Interventions that promote “serve and return” interactions and offer individualized coaching that increases parents' awareness of their child's behaviors can prevent or reduce abuse and neglect.
- Policies and programs that alleviate poverty may have the greatest impact on child development when the children are youngest.
- Intensive and early intervention for children with special needs can improve their skills, school achievement, and long-term independence.
- For parents and other caregivers with mental health problems, clinical services and support programs are most likely to help the children if they treat both the adult and the child in the context of their relationship.
- Because excessive parental intake of alcohol or mood-altering drugs and recurrent domestic violence can be extremely detrimental to child development, the limited data on intergenerational interventions should be a clarion call for more effective approaches.

3 Support the Health and Nutrition of Children and Mothers Before, During, and After Pregnancy

The foundations of lifelong health begin with the well-being of the future mother before she becomes pregnant. Preventive health care for pregnant women and their young children is essential for supporting physical, emotional, and cognitive development. Programs that help meet children's early nutritional needs also promote healthy brain development and overall well-being. Although recent expansions in health insurance coverage in the United States have improved access to medical services, persistent racial, ethnic, and socioeconomic disparities in low birth weight, infant mortality,

and many chronic diseases remain a serious challenge. Many thought leaders point to pediatric primary care as the most appropriate point of entry for a universally available, prevention-oriented system of services—a role that is not currently being filled successfully by most primary care settings and would benefit from fresh thinking. Even more important is the need for more effective, preventive interventions at the community level to reduce stress-inducing burdens on families (i.e., the social determinants of health), which are beyond the capacity of the medical care system alone to address.

4 Improve the Quality of the Broader Caregiving Environment

Whether home- or center-based, non-parental care that features well-documented effectiveness factors can generate a range of positive life outcomes for young children. These factors include language-rich environments that provide warm and responsive, serve-and-return interactions in safe physical settings with small group sizes and high ratios of adults to children. Because young children from economically insecure families experience greater variation in child care quality, increasing their access to high-quality care is clearly needed.

5 Establish Clear Goals and Appropriately Targeted Curricula

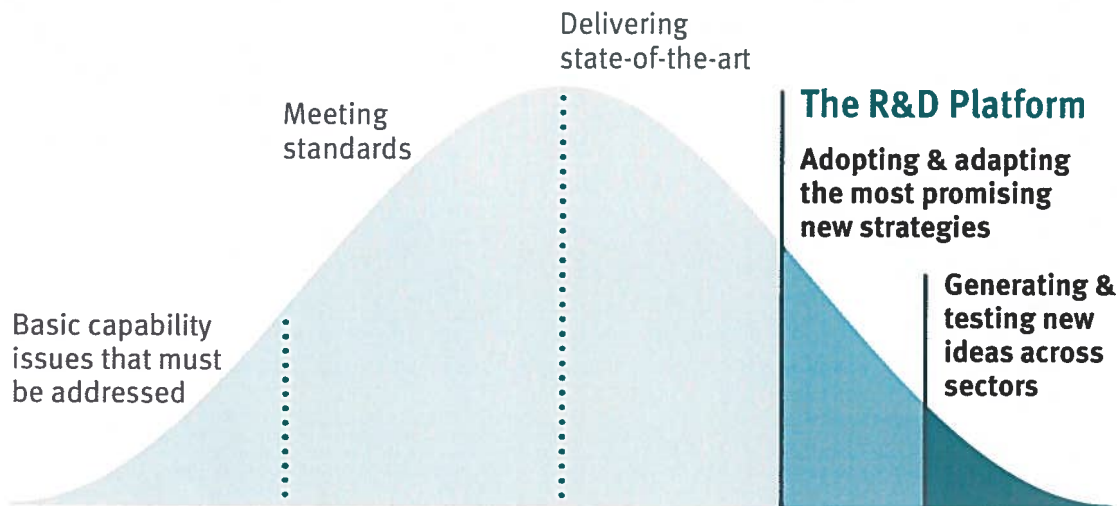
Programs for young children are most effective when they implement an age-appropriate curriculum that provides engaging activities designed to achieve clearly defined goals. However, when successful services are not described precisely, they are difficult to replicate and impossible to scale. In contrast, when an explicit theory of change is articulated and services are well-defined, pre-identified impacts are more likely to be achievable, replicable, and scalable.

Best Practice as a Starting Point, Not the Destination

The five core principles of effective programs described above can guide continuous improvement in the quality of a wide array of policies and programs that have evolved in the United States over the past half-century. The well-documented impacts of flagship programs include higher educational attainment, fewer unplanned pregnancies, increased economic productivity, and reduced criminal behavior. Nevertheless, the quality of implementation when programs are replicated continues to be variable, and the magnitude of impacts achieved by scaled-up programs has remained small to moderate.

We can and must do better. This is particularly true for children in the first three years after birth and for families whose needs are not being met by existing policies and services. Determining the appropriate mix of strategies to capitalize on strengths and address needs is one of the most compelling challenges facing the early childhood field.

Filling the Missing Niche



SOURCE: CENTER ON THE DEVELOPING CHILD (2016), ADAPTED FROM EVERETT ROGERS, *DIFFUSION OF INNOVATIONS* (2003).

Creating an R&D Engine to Produce Breakthrough Impacts at Scale

Successful leaders in other fields (e.g., technology, medicine, and business) all maintain a comparative advantage by investing in research & development (R&D). That same mindset must be incorporated into the design and testing of new strategies to address the challenges facing young children and their families—from early learning and primary health care to public health, child welfare, poverty reduction, mental health, community development, and criminal justice. The time has come to build a dynamic R&D platform to catalyze a new era in early childhood policy and practice—driven by a new way of thinking fueled by advances in science and a new way of working that embraces the culture of innovation.

Well-established scientific knowledge suggests three fundamental shifts in the thinking that informs most current policies and programs focused on young children:

- Early experiences affect lifelong physical and mental health, not just learning.
- Healthy brain development requires protection from excessive stress, not just enrichment in a stimulating environment.
- Achieving breakthrough outcomes for children experiencing significant adversity requires that we support the adults who care for them to transform their own lives.

Substantially greater impact at a population level, however, requires more than new ideas—we must also change the way

we design, test, evaluate, and scale promising strategies. We believe this requires the following components:

Co-Creation in Designing and Testing New Program Strategies. Actively combining knowledge and experience from science, practice, community, and policy perspectives is essential to innovative thinking. Productive collaboration brings together people who seek novel ideas to address identified gaps and challenges with partners who develop creative approaches to achieve specified outcomes. When these roles converge in teams and settings that have the mindset, skills, leadership, and flexible funding to design and test new strategies, the conditions are in place for breakthrough impact.

Precision in Intervention Definition and Measurement. Achieving population-level impact depends upon the ability to learn what works (and doesn't) for whom, when, in what context(s)—and why. This degree of specificity requires a precise theory of change, well-defined intervention materials tied to explicitly defined target domains, and an evaluation plan that drives the rigorous measurement of those domains, the underlying core capacities that are expected to change, and a limited number of important outcomes. The ultimate value of this approach is demonstrated by how much is learned about the intervention's impacts, not by whether sufficient evidence is produced to prove it was effective on average.

A Rapid-Cycle, Iterative Process for Improving Programs.

A nimble process of continuous learning from small-scale feasibility studies and pilot testing of promising, new interventions with small numbers of children and families provides valuable opportunities to explore causal pathways and test program effects across varied contexts, target groups, dosages, and modifications—all with less upfront funding and a shorter timeframe for producing results.

A Strategy for Identifying Who Benefits Most (and Least).

The transition from successful demonstration projects to population-level impacts requires significant attention to the heterogeneity of populations being served and the inevitable variability in their response to interventions. When program developers and system leaders can match effective strategies to relevant client characteristics, they can better serve children and families that are most likely to benefit while driving the development of new approaches for those who do not.

An “Active Ingredients” Approach to Cost-Effective

Scaling. When program evaluators ask “does it work?” rather than “which features work for whom and why?” the only pathway to scaling is to replicate every aspect of the program. A more efficient and cost-effective approach would selectively scale the active ingredients of an effective intervention within existing programs or service infrastructures.

Innovation that Extends Beyond Programs and into Systems.

Science-based R&D can also be driven by decision-makers in a multitude of systems that set explicit priorities, establish incentives and reduce barriers to innovation, and serve children and families at a population level. Creative leaders in a diversity of venues can play important roles in developing and sustaining R&D at a systems level by adopting the principles described above and providing the funding and regulatory flexibility needed to support risk-taking and learn from both successes and failures.

A Call to Action

A highly energized R&D dimension is an essential part of any healthy, sustainable enterprise. Its absence in the early childhood field threatens the future of all communities in which the challenges facing children and families are not being fully met by existing policies and programs. Building one will require an active and diverse community of change agents in community, policy, program, system, research, education, and philanthropic settings. The central question before us is not

whether strategic risk-taking and fresh thinking are important prerequisites to breakthrough impacts. The more compelling questions are: How can we make that happen? What will it take to reduce the barriers and provide incentives? How can we come together across multiple sectors to learn from both failure and success? The possibility for substantial progress in our ability to dramatically improve the life prospects of young children is real. The time to aim higher is now.

The Center on the Developing Child’s mission is to drive science-based innovation that achieves breakthrough outcomes for children facing adversity. We believe that advances in science provide a powerful source of new ideas focused on the early years of life. Founded in 2006, the Center catalyzes local, national, and international innovation in policy and practice focused on children and families. We design, test, and implement these ideas in collaboration with a broad network of research, practice, policy, community, and philanthropic leaders. Together, we seek transformational impacts on lifelong learning, behavior, and both physical and mental health. Learn more at www.developingchild.harvard.edu.

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