Center on the Developing Child
HARVARD UNIVERSITY

Leveraging Science to Strengthen the Foundations of Lifelong Learning, Behavior and Health through Innovations in Policy and Practice

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CORE Group Webinar
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The Foundation of a Healthy and Sustainable Society is Built in Early Childhood

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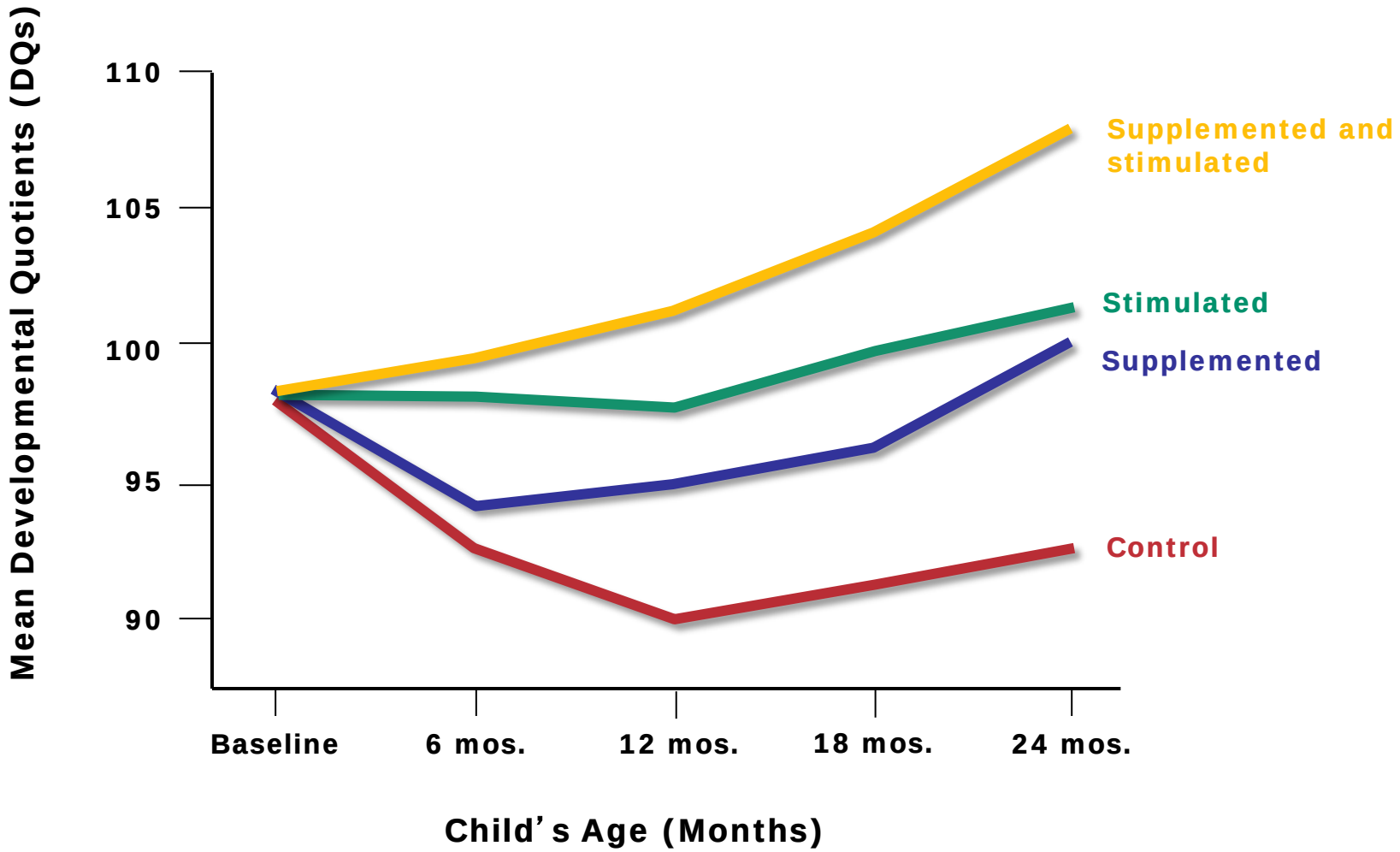
Attention to early development can multiply the impact of investments in many different sectors, including health, education, nutrition, protection, and economic empowerment.

Developmental Interventions Multiply Impact



Source: Grantham-McGregor, et al. (1991)

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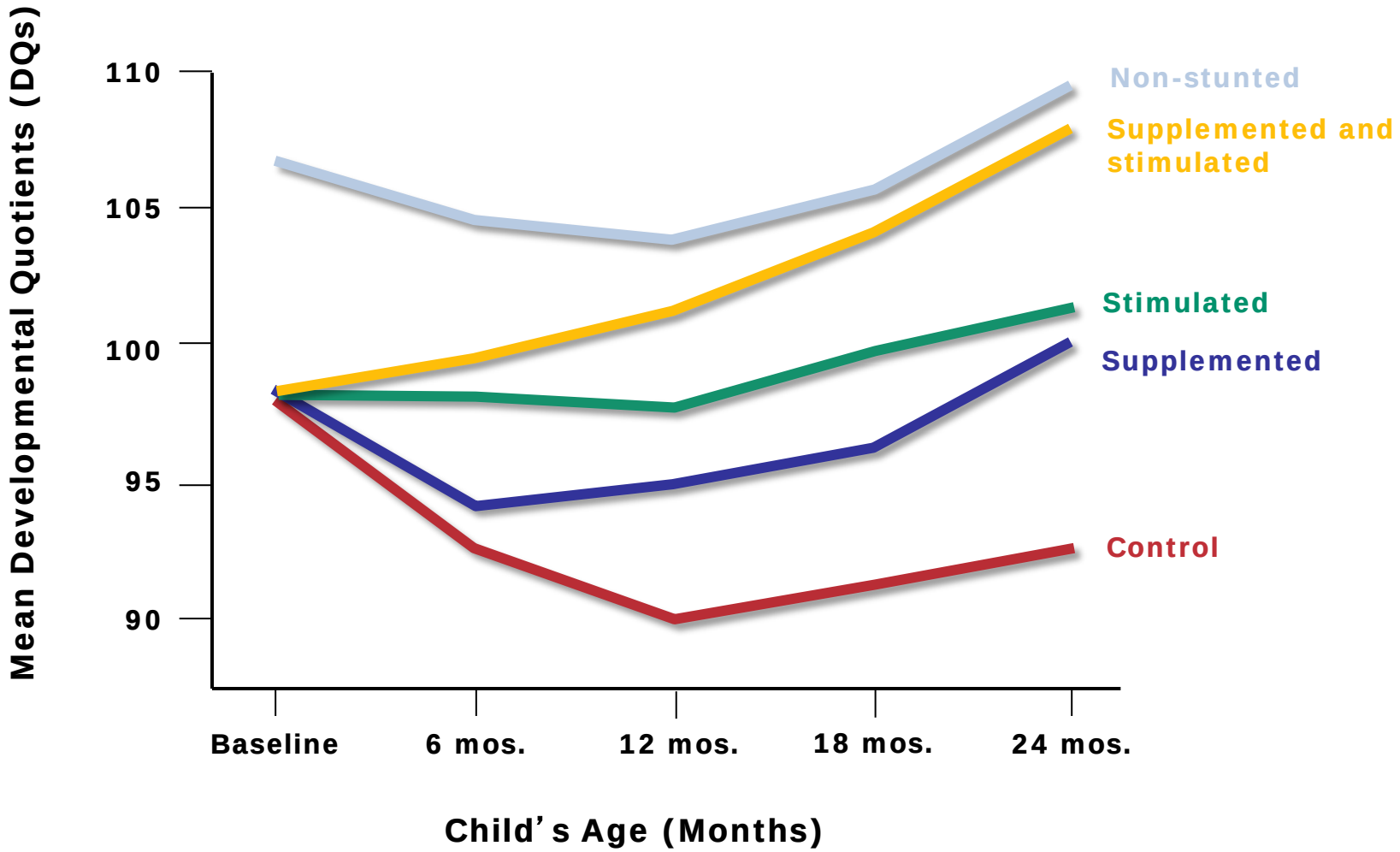

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PART 1:
CORE SCIENTIFIC CONCEPTS

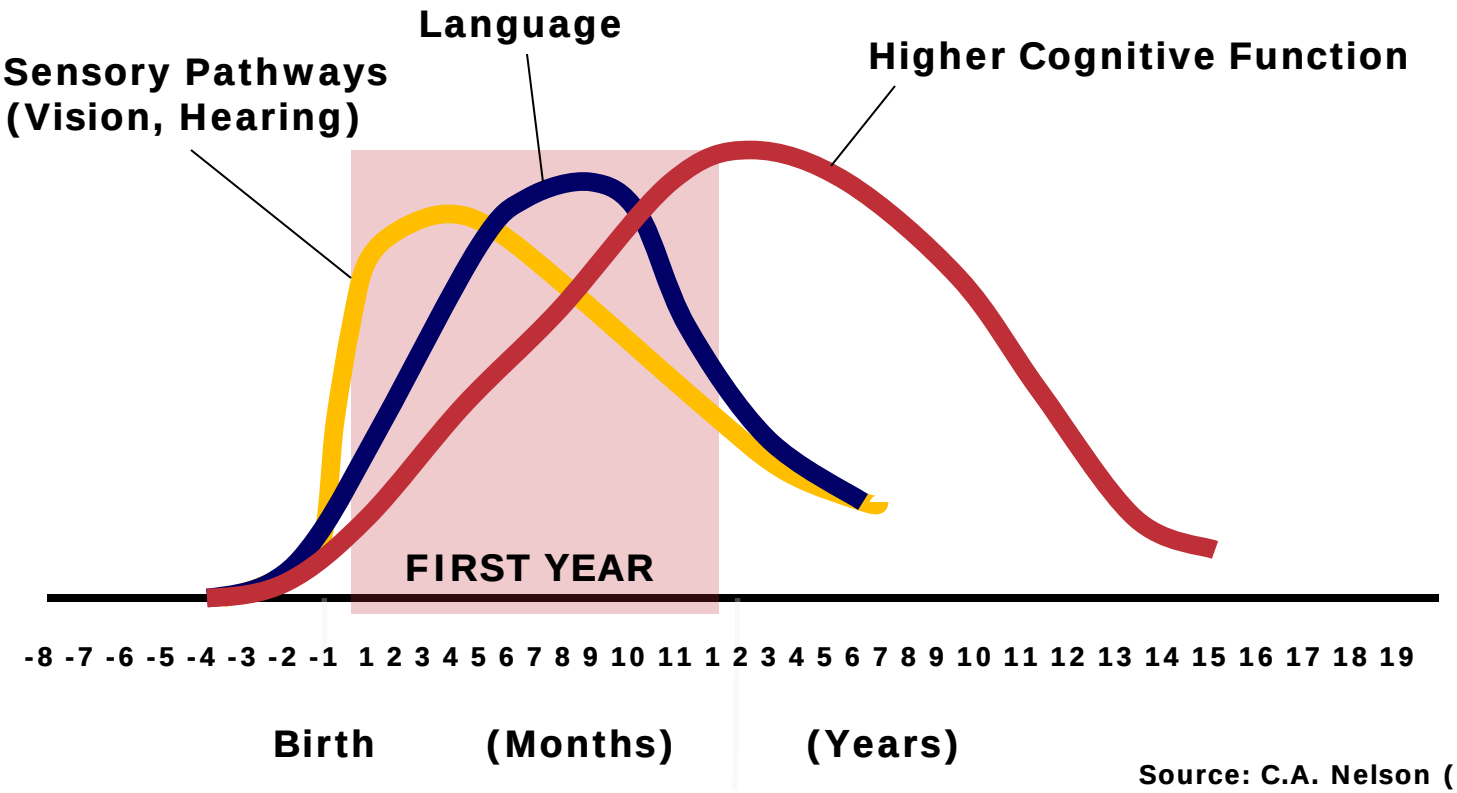
Brain Architecture Supports Lifelong Learning, Behavior, and Health

Brains are built over time, starting in the earliest years of life. Simple skills come first; more complex skills build on top of them.

Cognitive, emotional, and social capabilities are inextricably intertwined throughout the life course.

A strong foundation in the early years improves the odds for positive outcomes and a weak foundation increases the odds of later difficulties.

Neural Circuits are Wired in a Bottom-Up Sequence



Source: C.A. Nelson (2000)

Brains and Skills are Shaped by the “Serve and Return” Nature of Human Interaction

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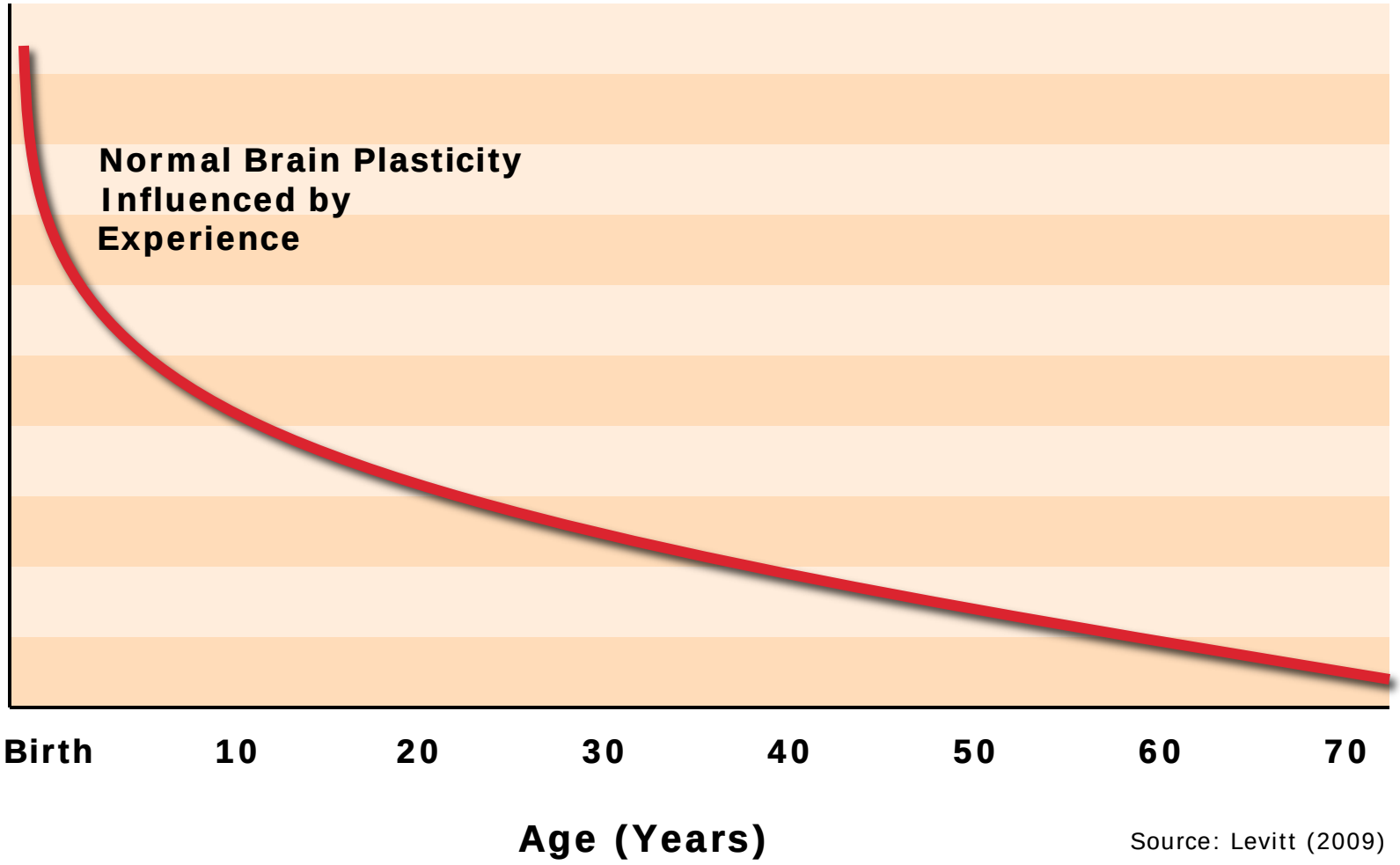
The Ability to Change Brains Decreases Over Time



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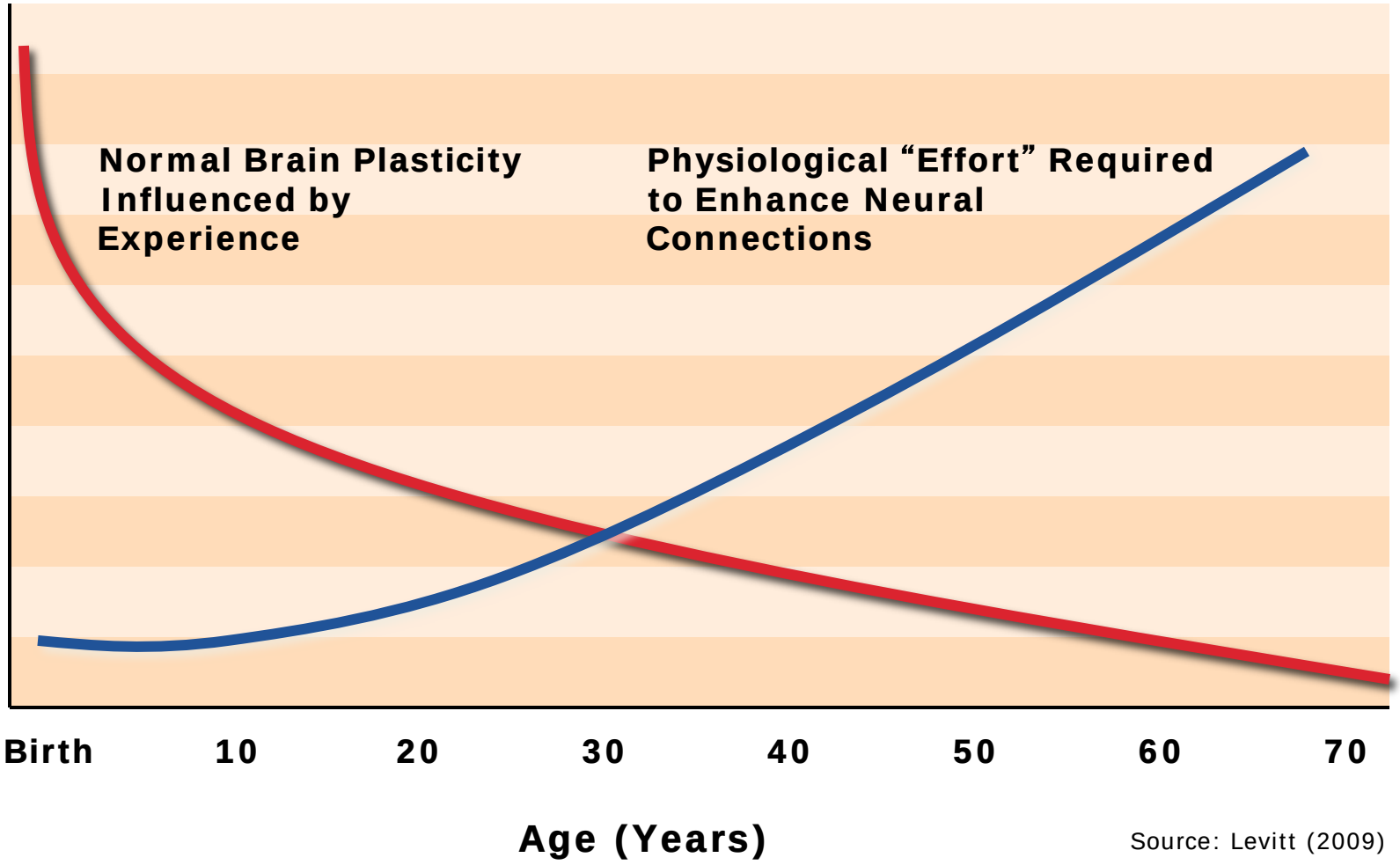

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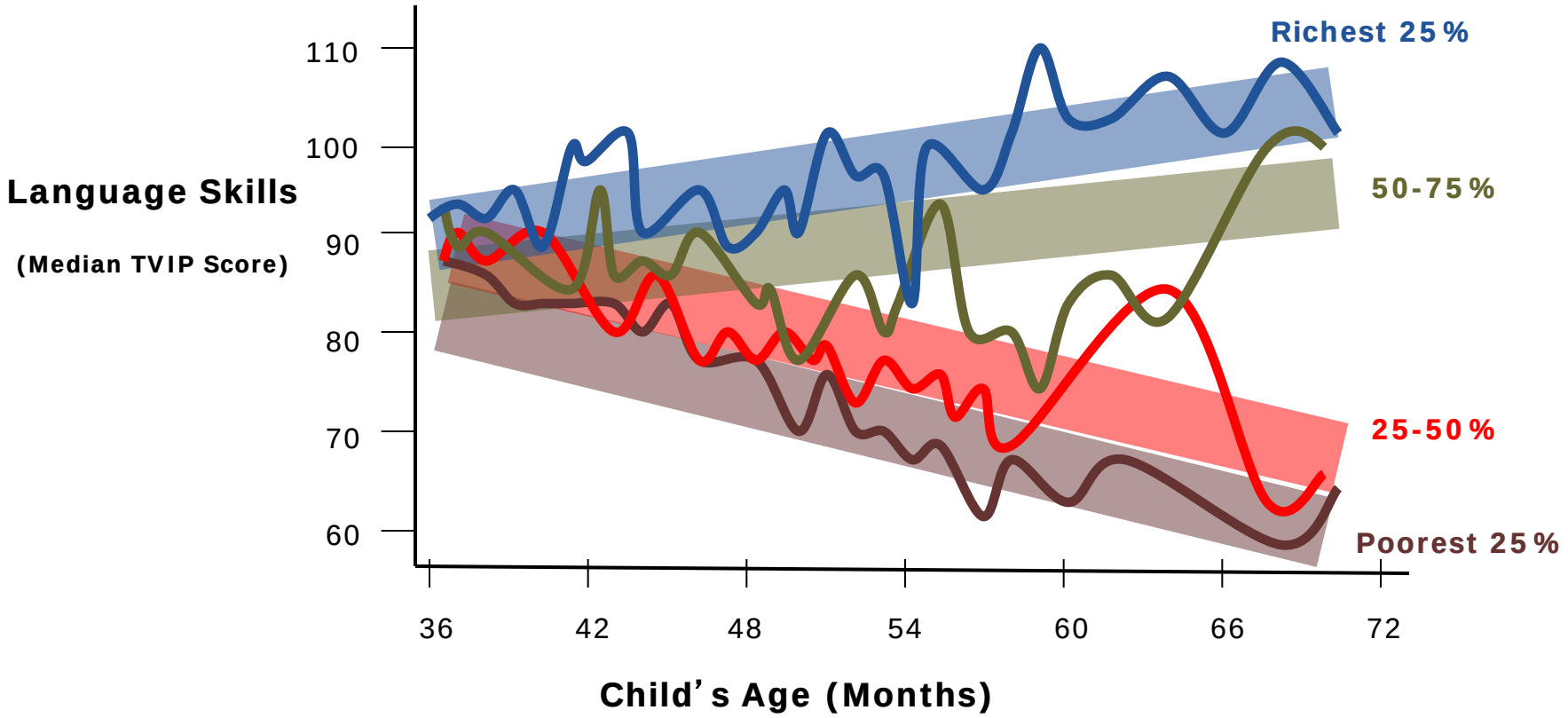
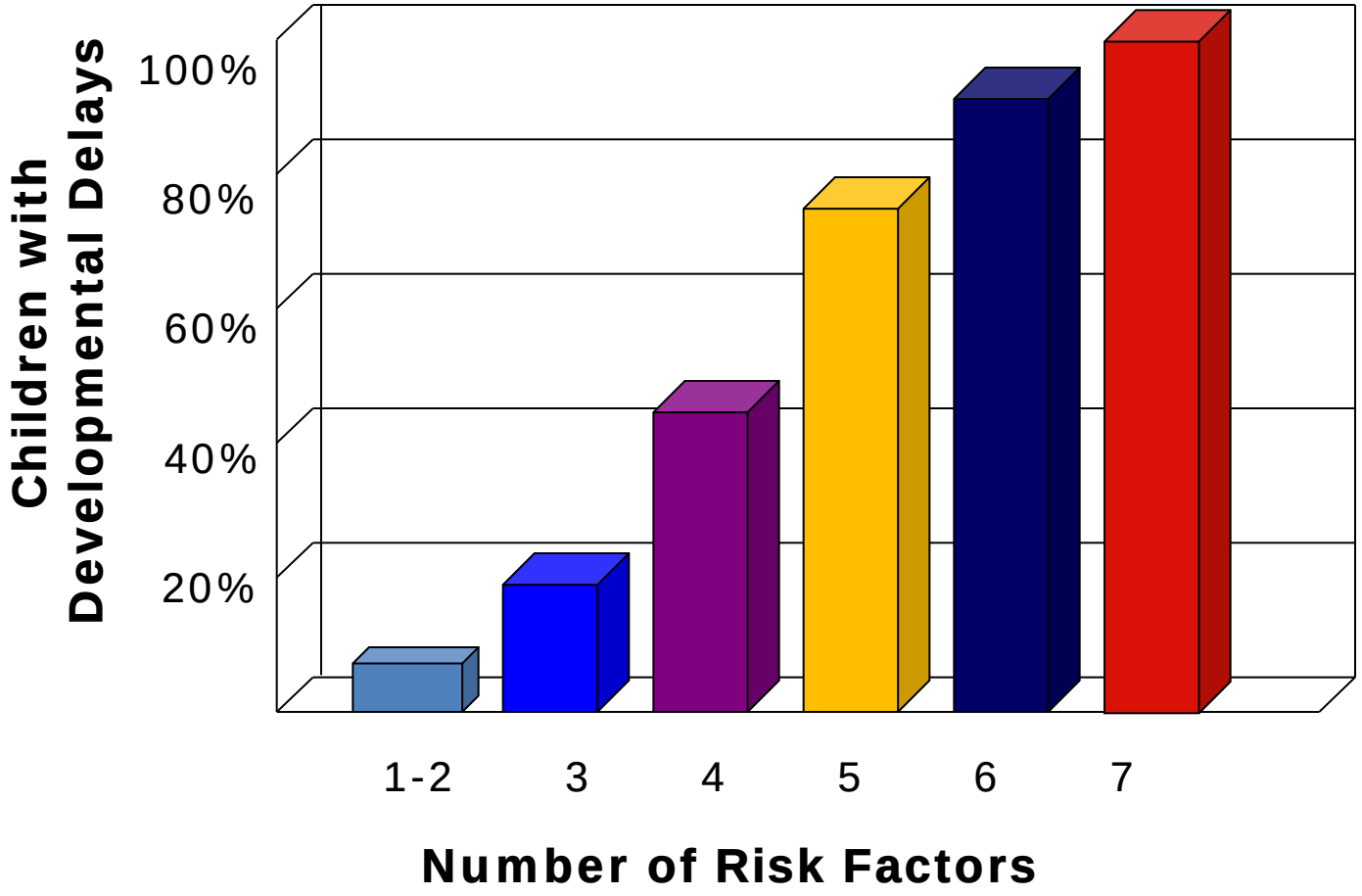
Barriers to Educational Achievement Emerge Before School Begins



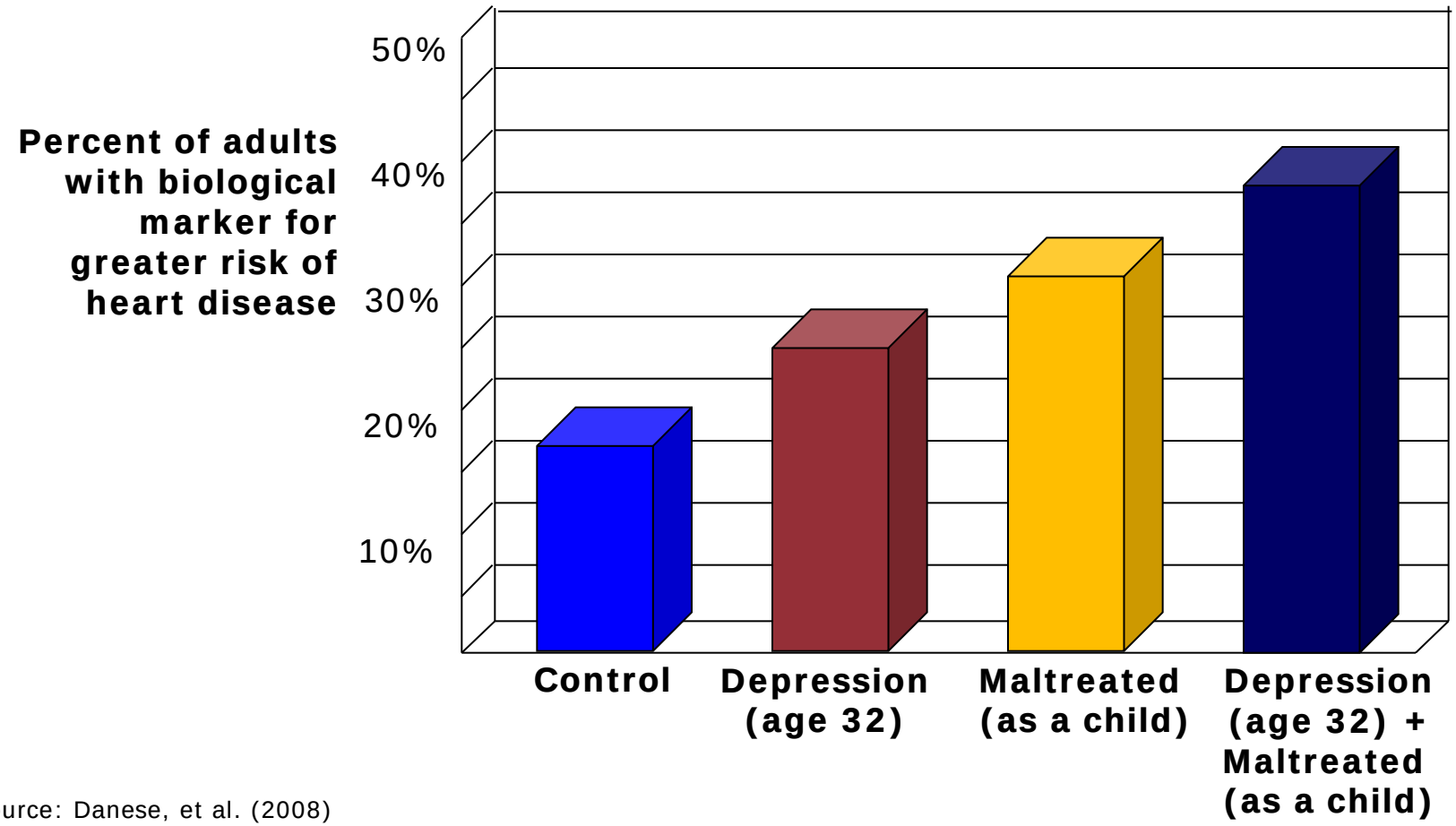
Source: Schady and Paxton (2005)

Significant Adversity Impairs Development in the First Three Years



Source: Barth, et al. (2008)

Biological "Memories" Link Maltreatment in Childhood to Greater Risk of Adult Heart Disease



Source: Danese, et al. (2008)

Early Life Experiences Are Built Into Our Bodies (For Better or For Worse)

Research on the biology of stress illustrates how increases in heart rate, blood pressure, serum glucose, stress hormones, and inflammatory cytokines fuel the “fight or flight response” to deal with acute threat…

…but excessive or prolonged activation of stress response systems can lead to long-term disruptions in brain architecture, immune status, metabolic systems, and cardiovascular function.

Three Levels of Stress Response

Positive

Brief increases in heart rate,
mild elevations in stress hormone levels.

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Serious, temporary stress responses,
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Serious, temporary stress responses,
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Toxic

Prolonged activation of stress response systems
in the absence of protective relationships.

Relationships Buffer the Effects of Stress

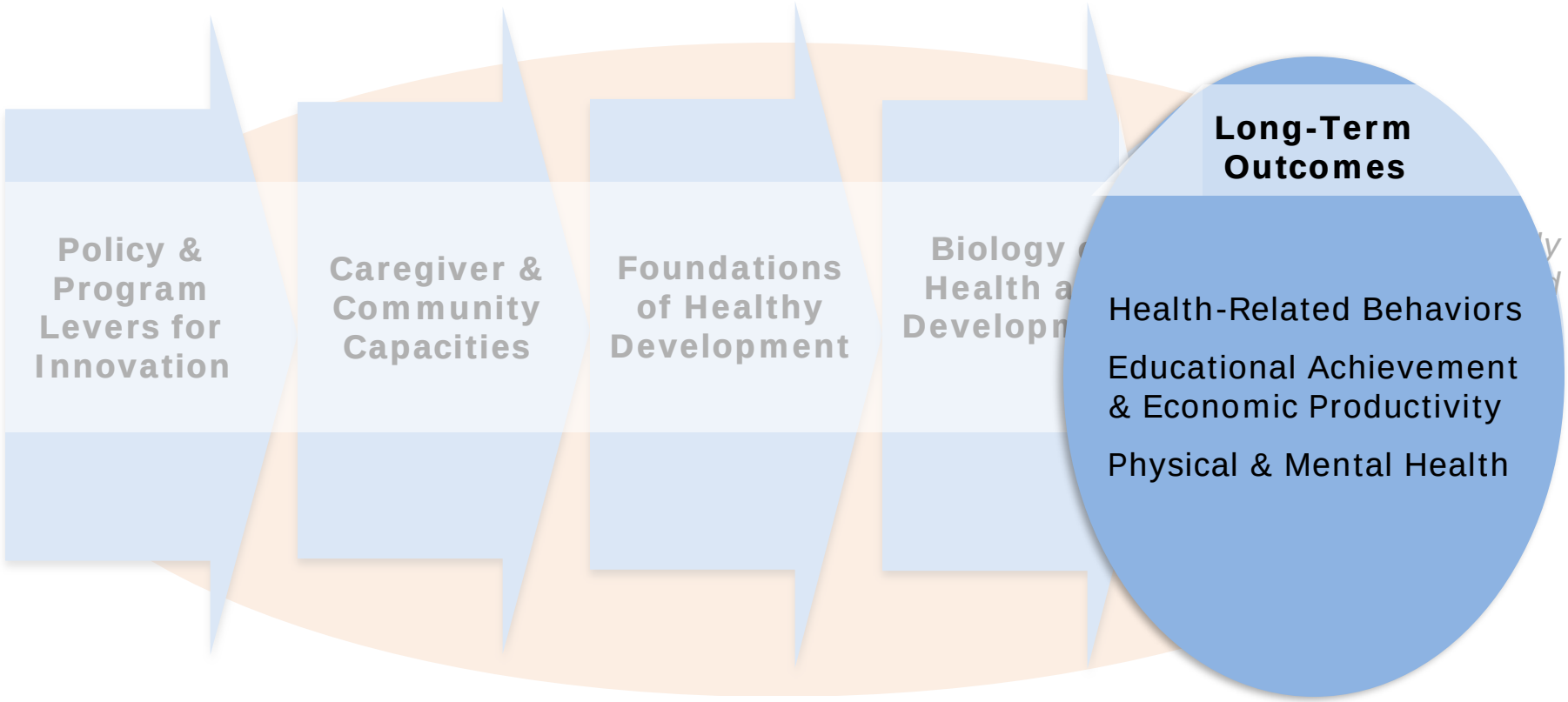
Learning how to cope with moderate, short-lived stress can build a healthy stress response system.

Toxic stress—when the body's stress response system is activated excessively—can weaken developing brain architecture.

Without caring adults to buffer children, toxic stress associated with extreme poverty, neglect, abuse, or severe maternal depression can have long-term consequences for learning, behavior, and both physical and mental health.

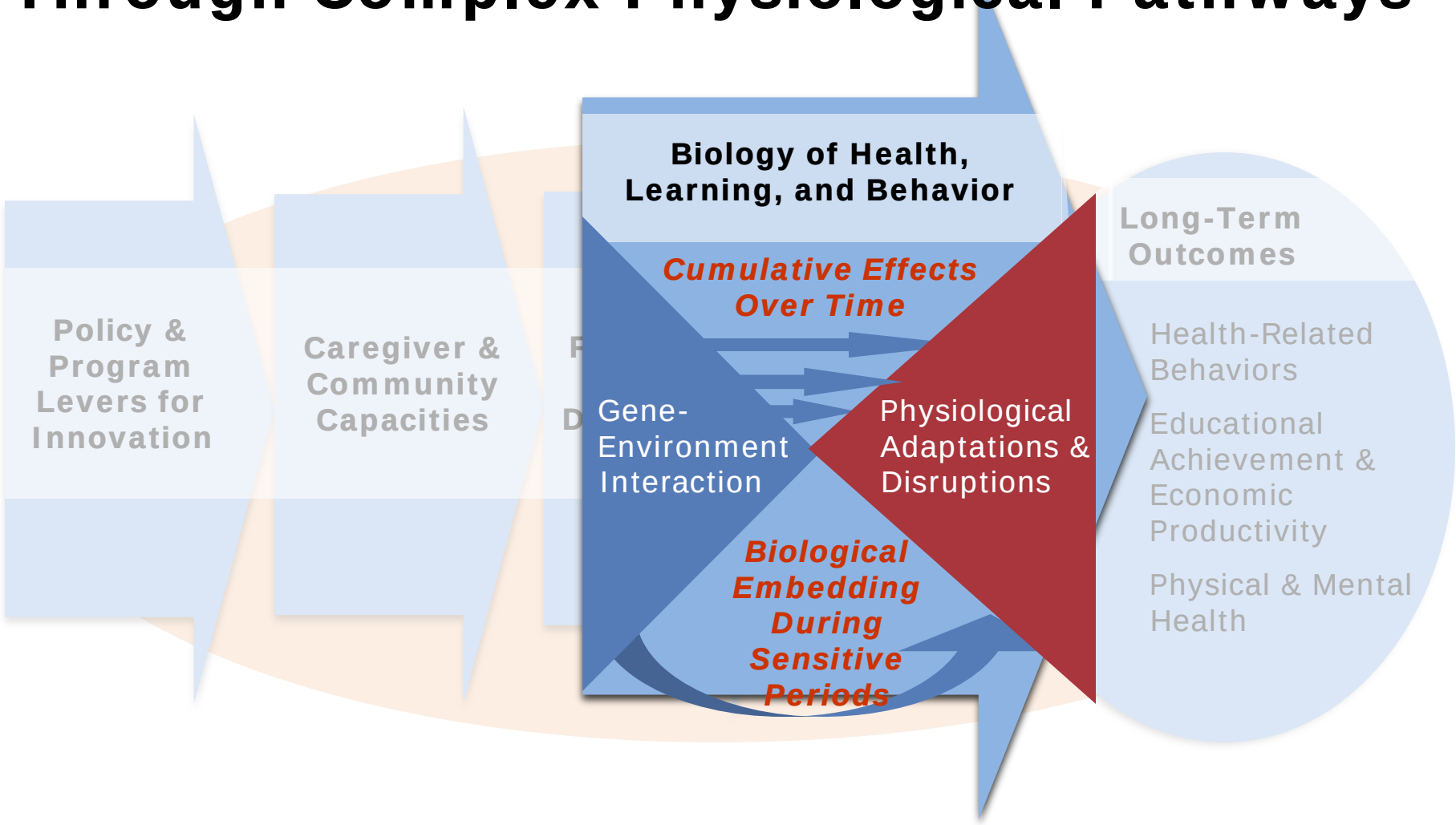
PART 2:
A MODEL FOR APPLYING SCIENCE TO POLICY AND PROGRAMS

Advances in Science Can Help Construct a Logic Model to Guide Early Childhood Policy



Source: Center on the Developing Child (2010)

Early Experiences Are Built Into the Body Through Complex Physiological Pathways



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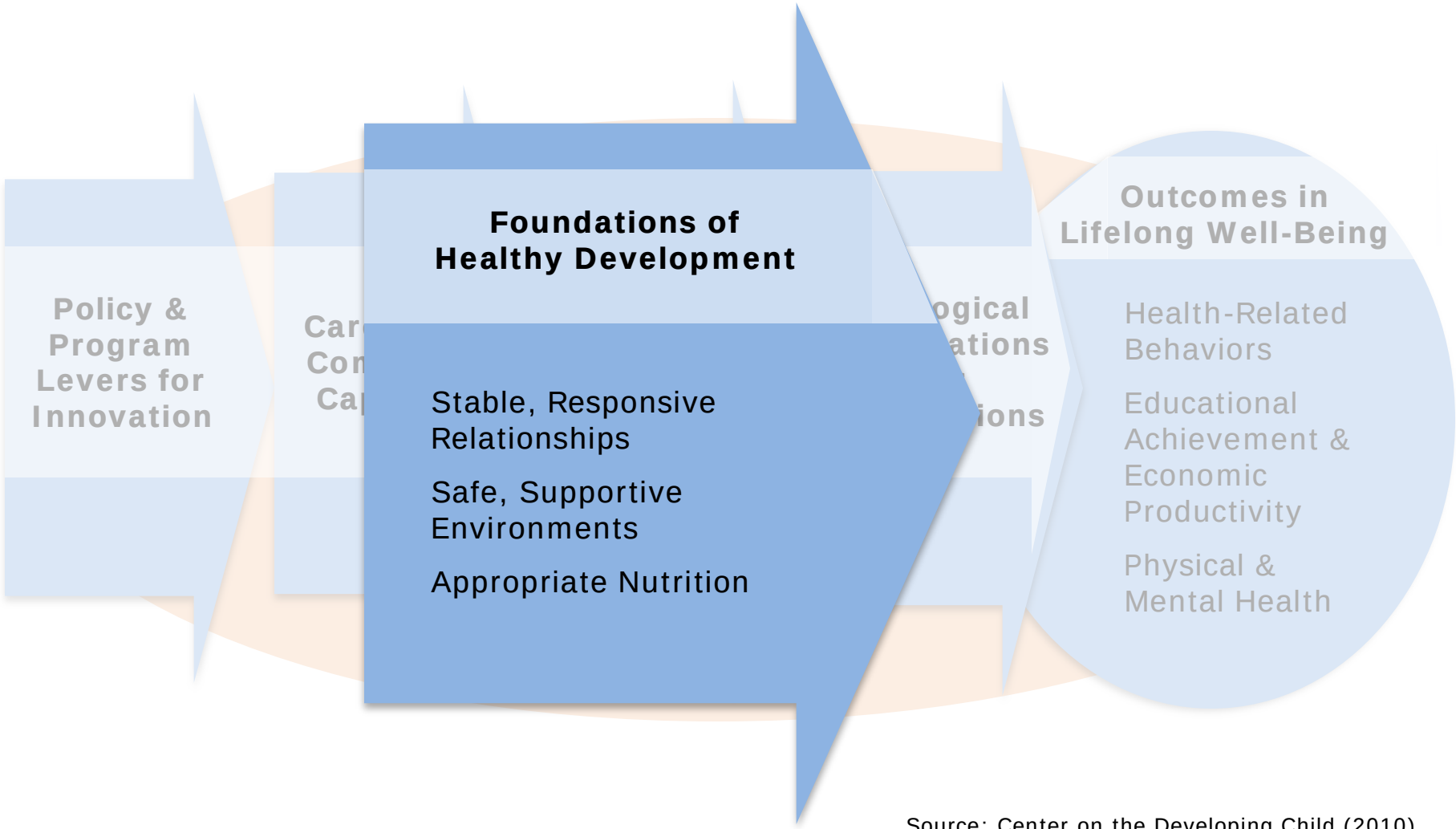
The Foundations of Healthy Development Influence Biological Responses Over Time



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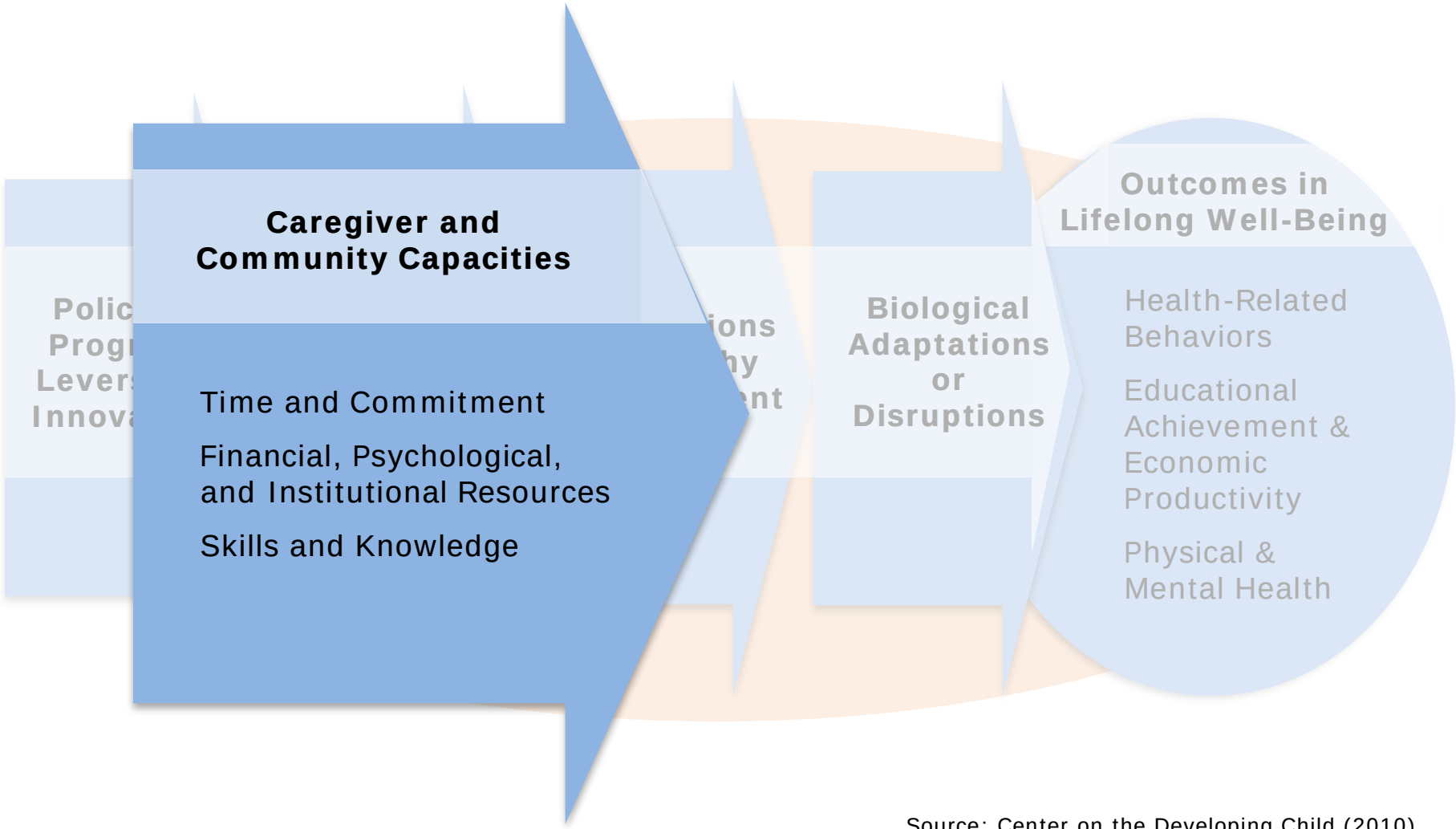
Caregiver and Community Capacities Affect the Strength of the Foundations



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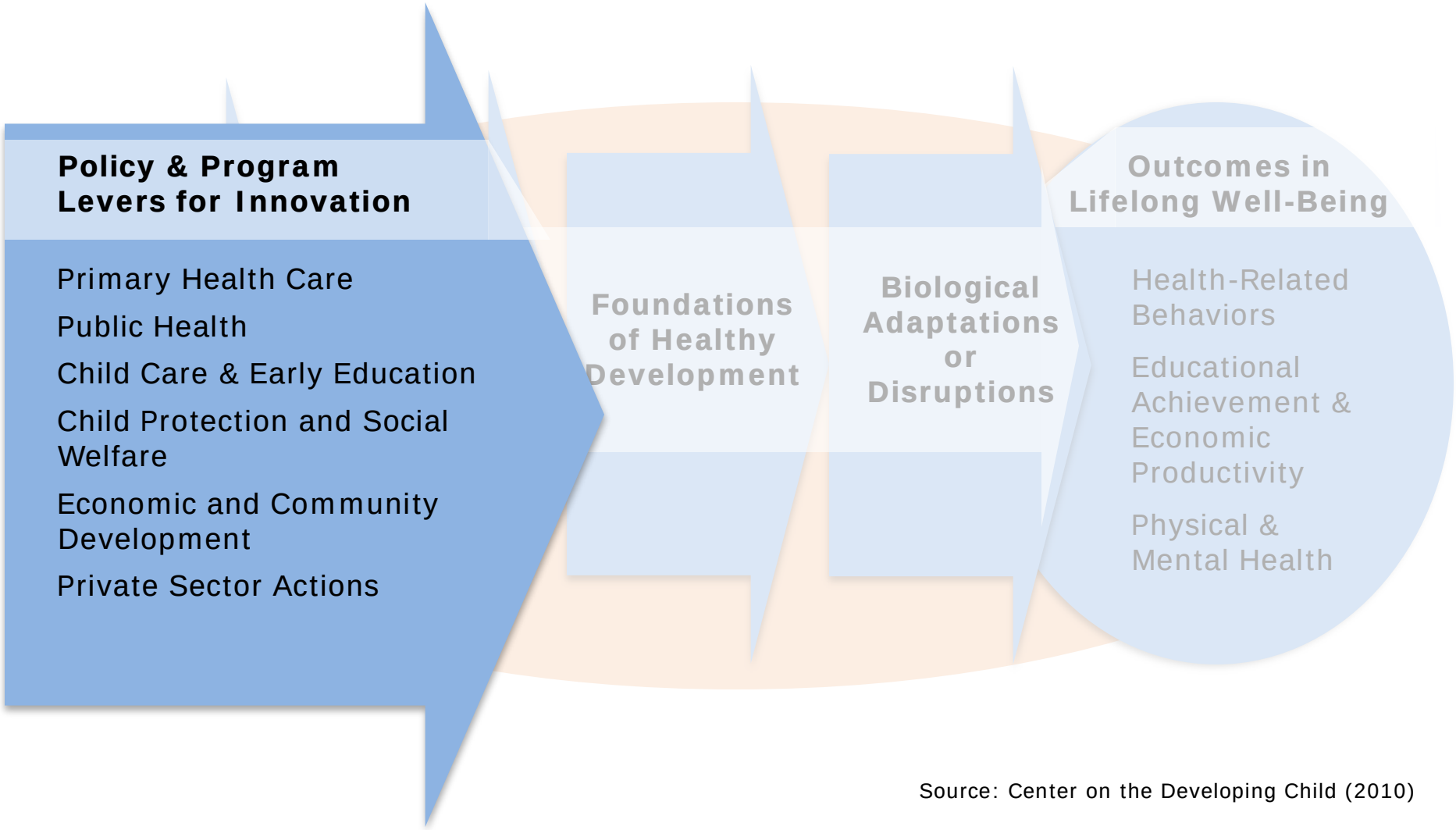
The Developmental Needs of Young Children Can Be Addressed Across Multiple Sectors



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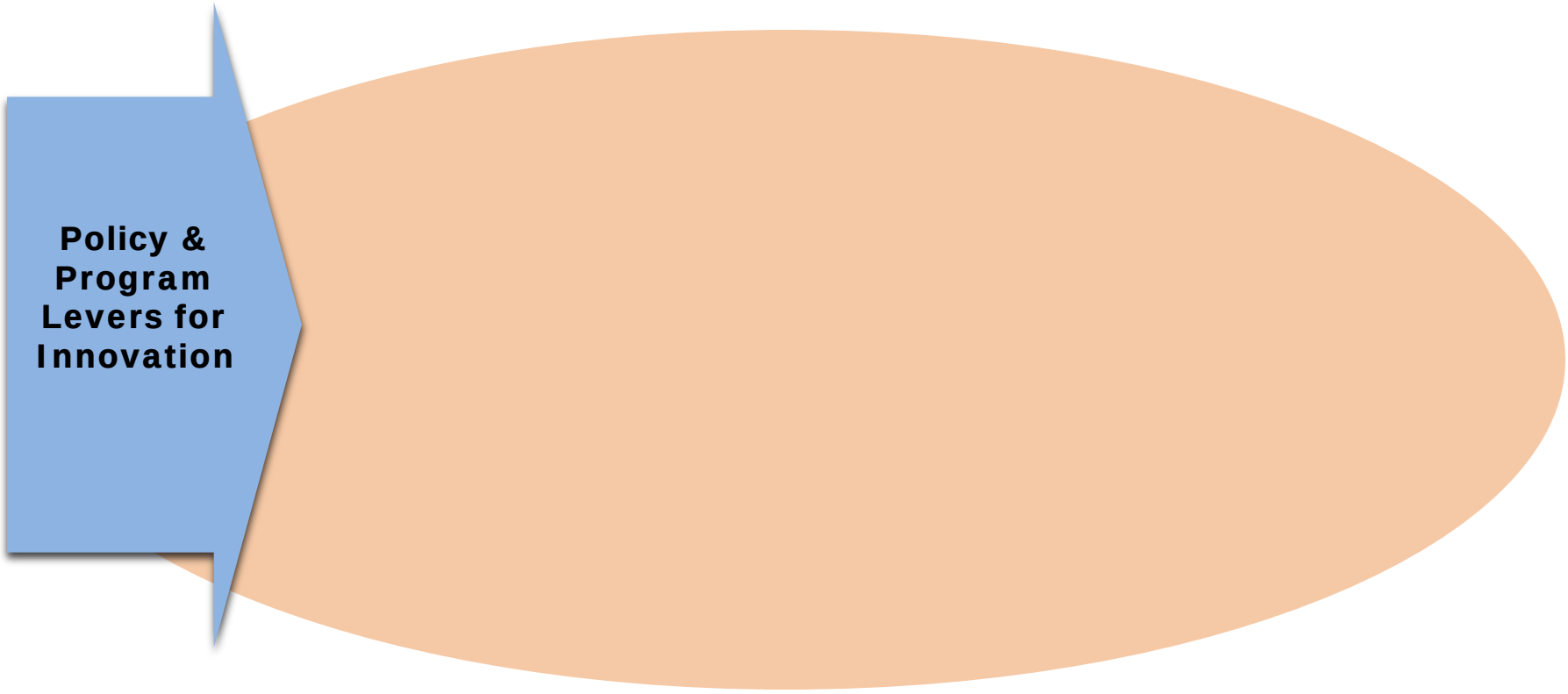
Science Can Inform an Integrated Approach to Early Investment in Healthy Development



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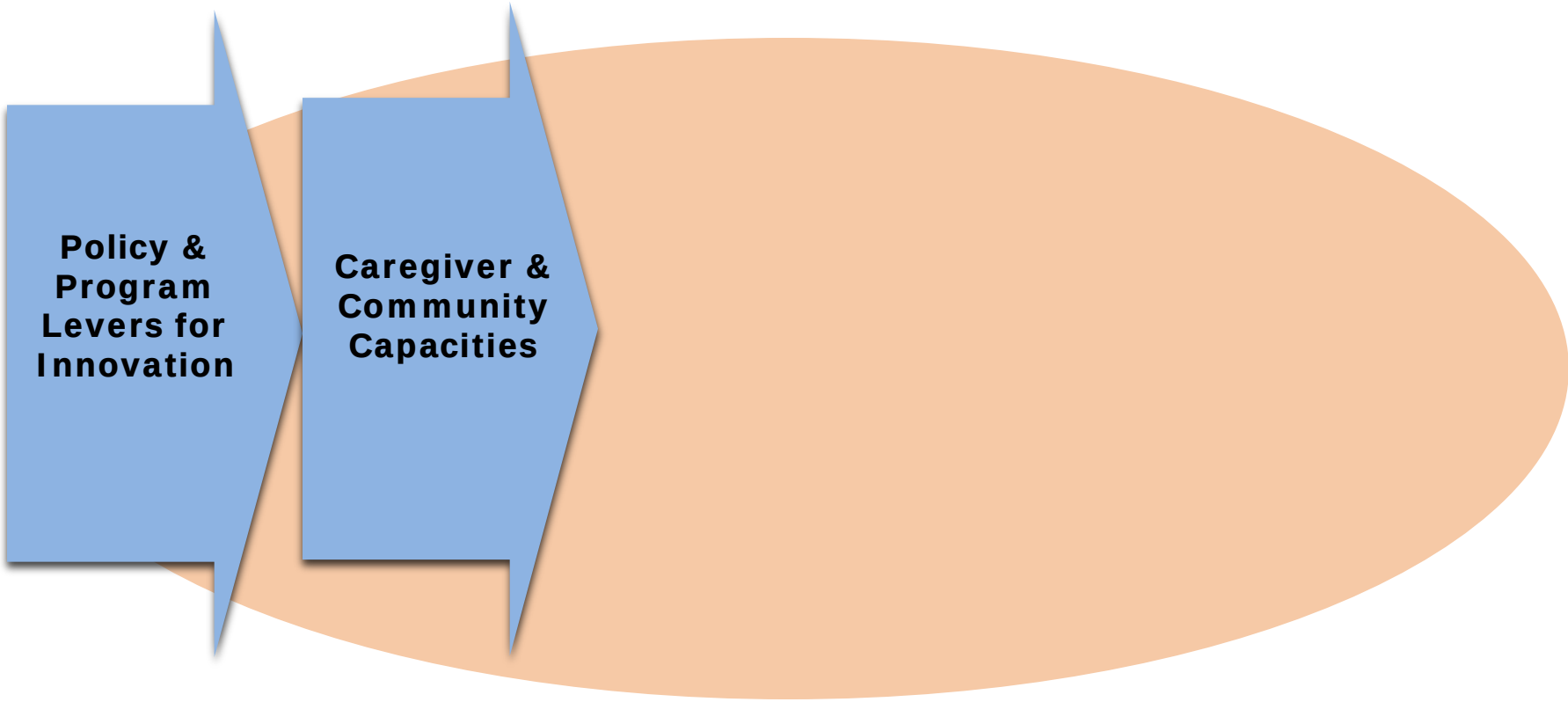

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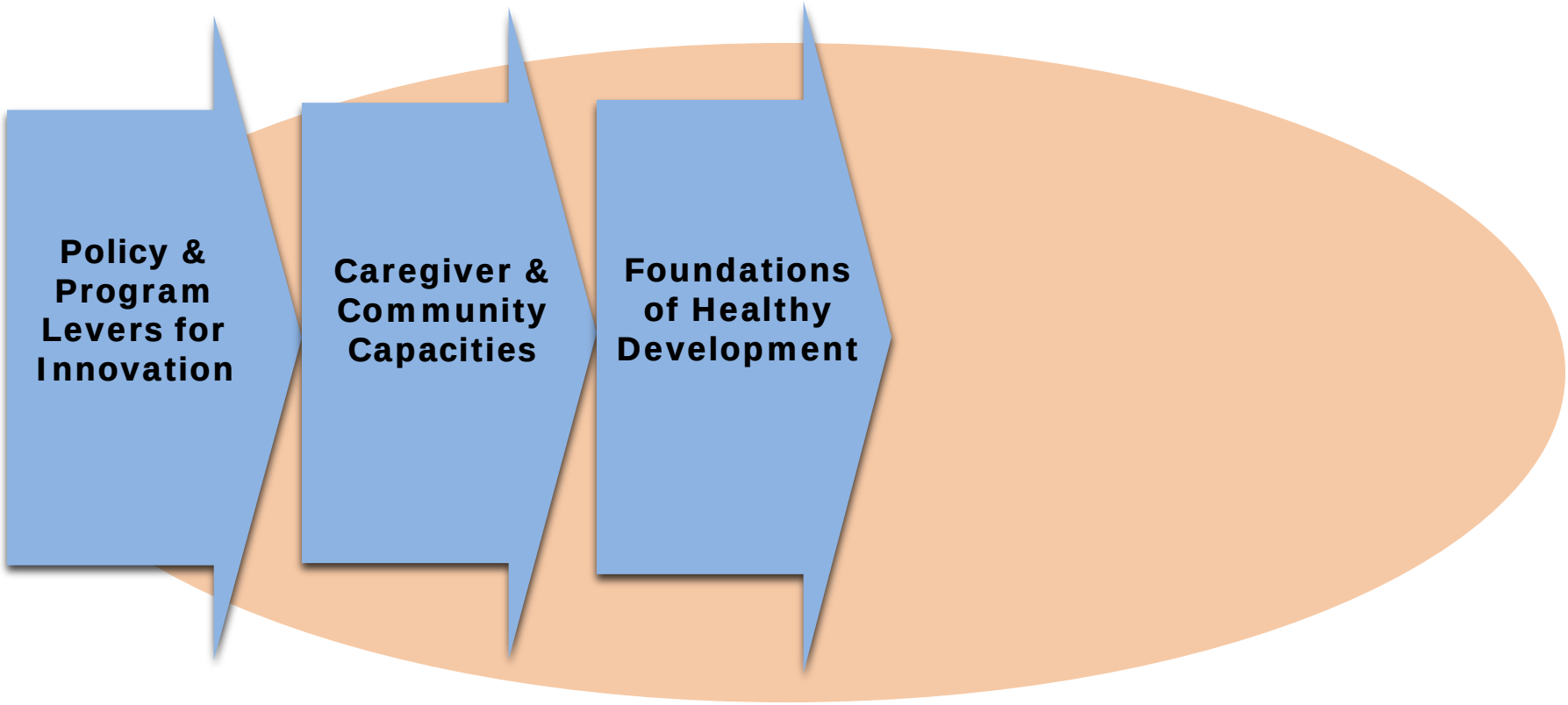

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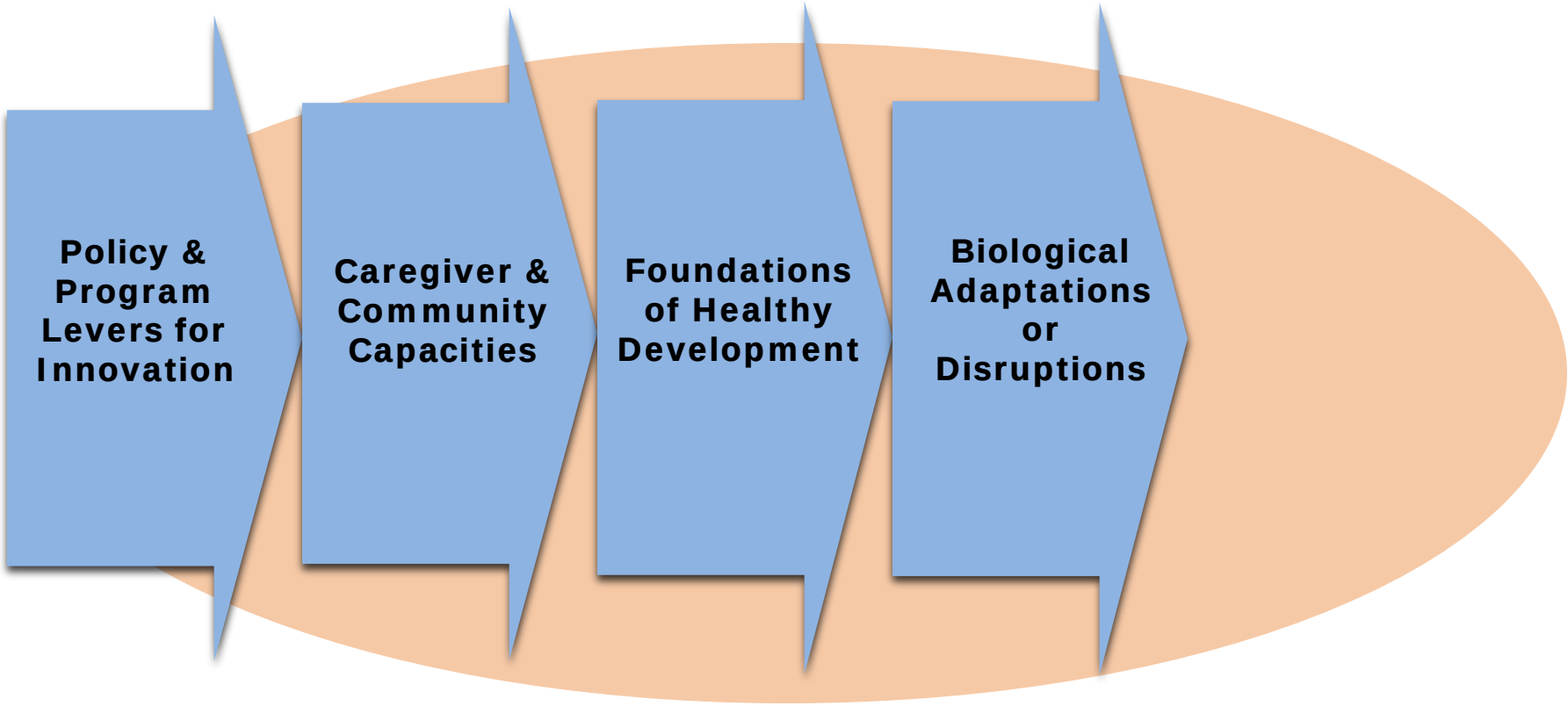

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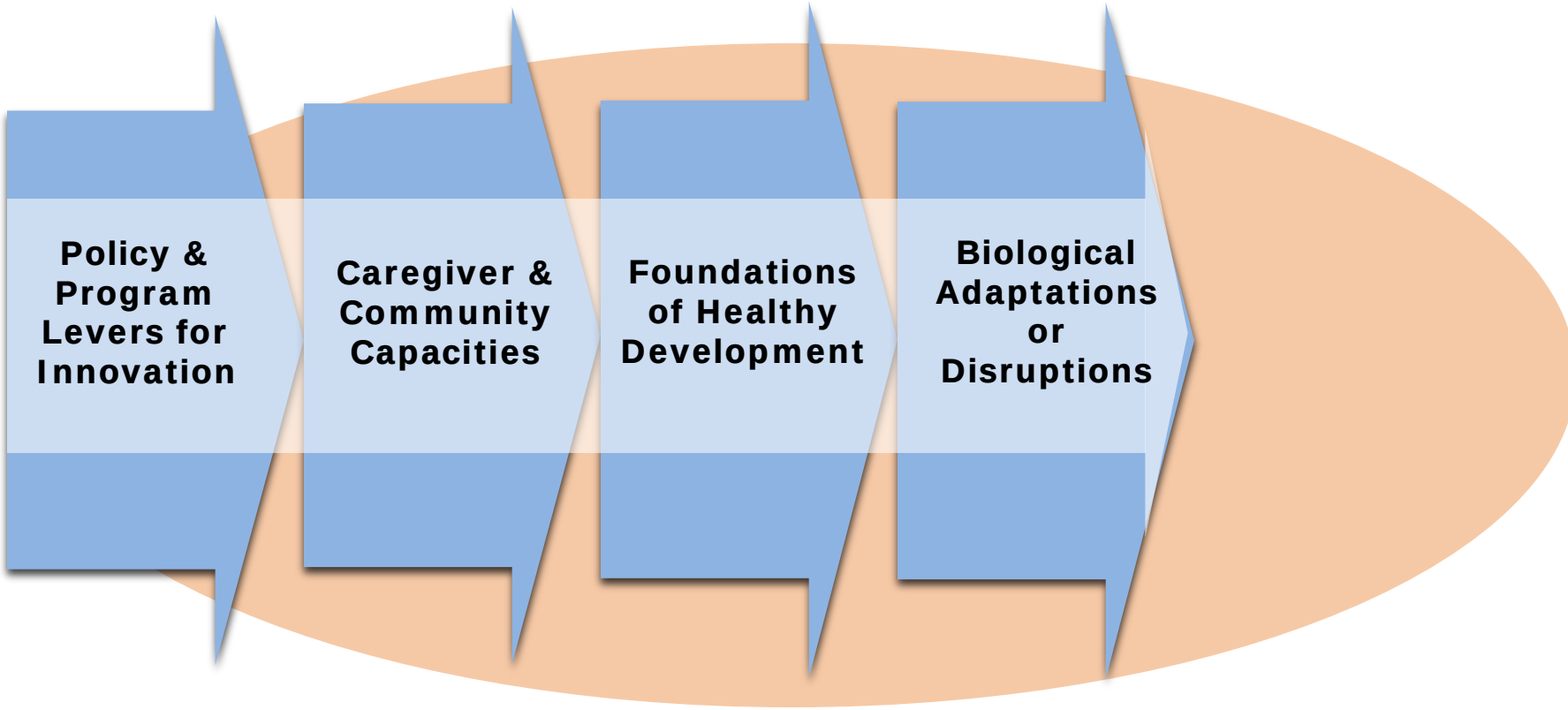

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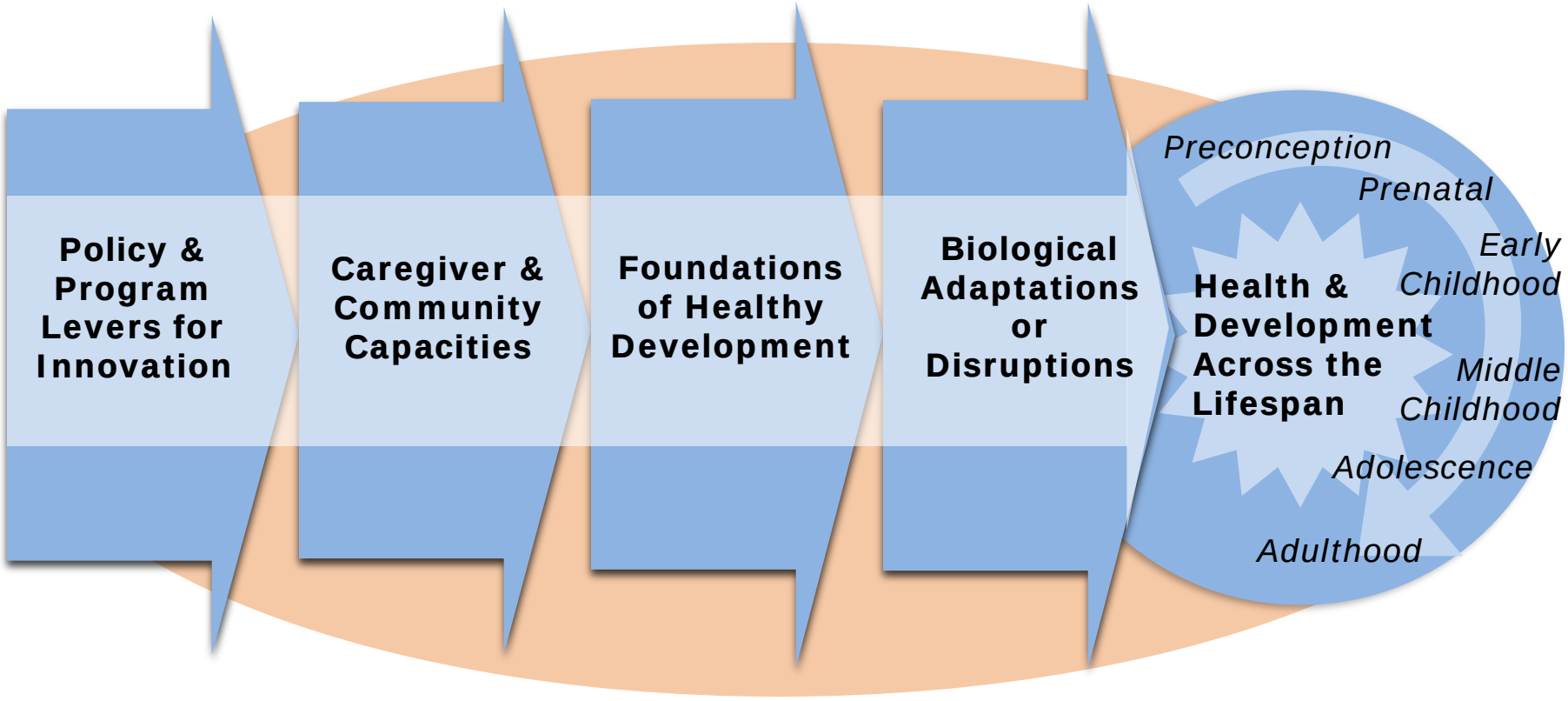

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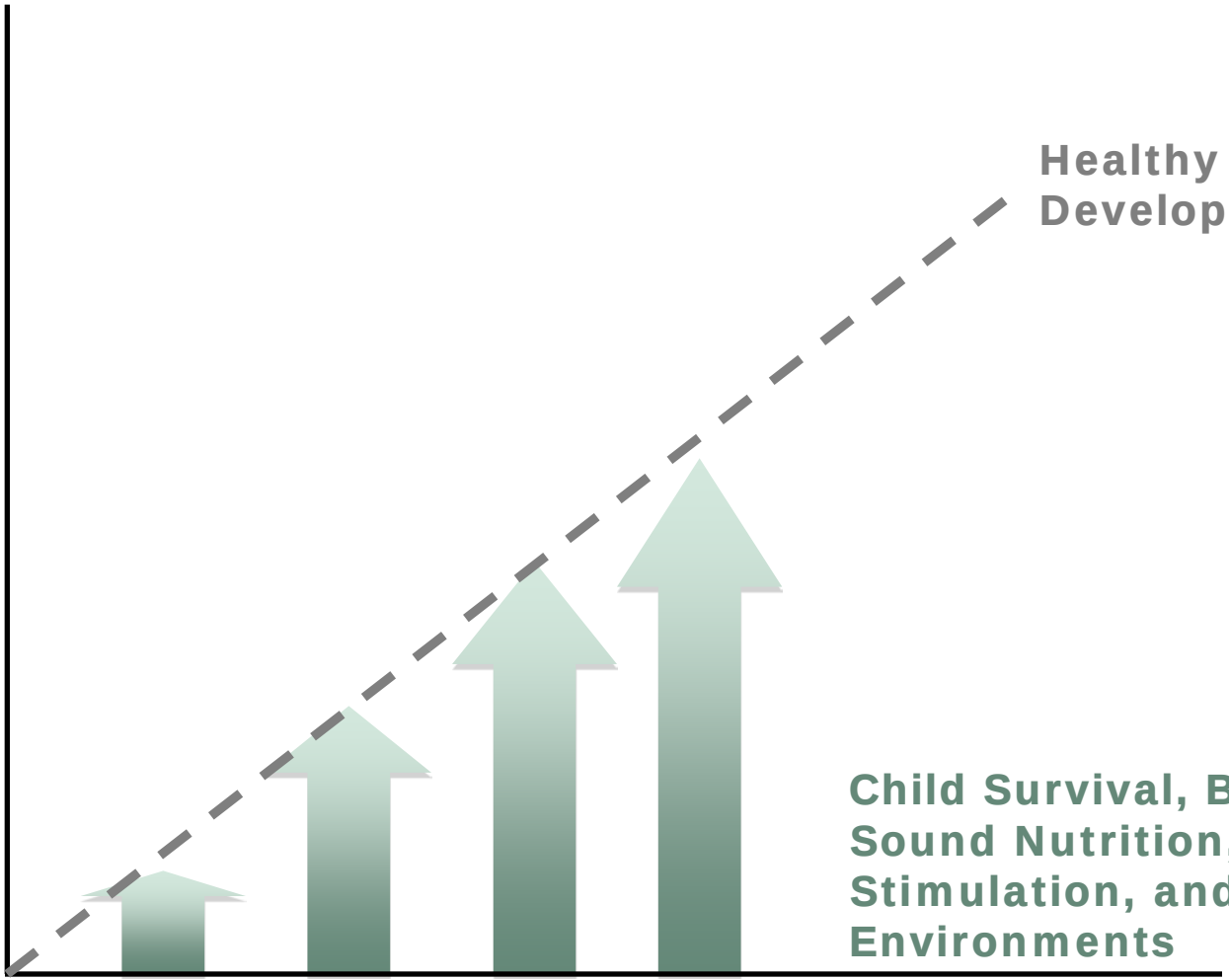
PART 3:
AN INNOVATION AGENDA FOR EARLY CHILDHOOD

Current Framework Guiding Early Childhood Health and Development



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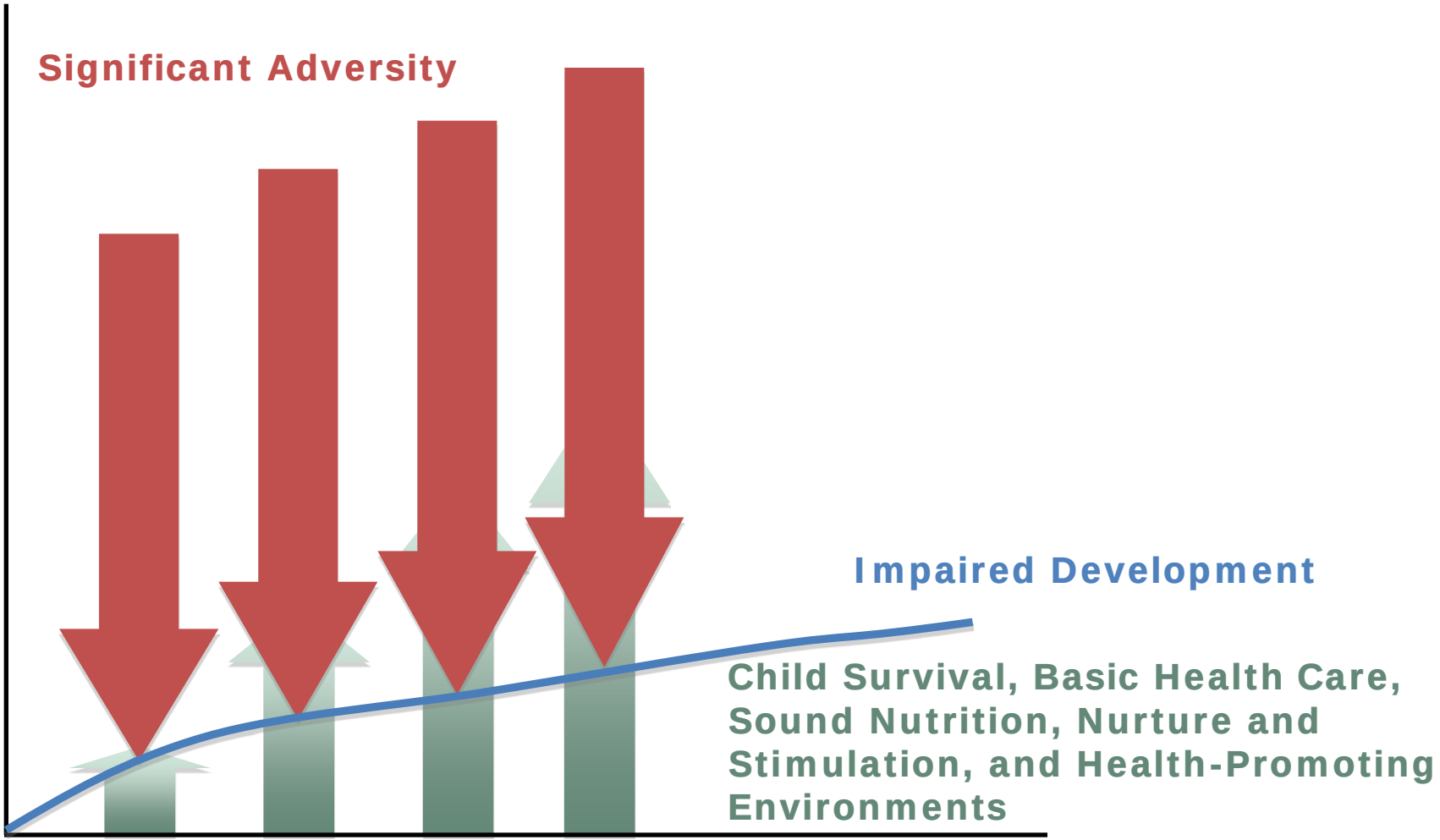
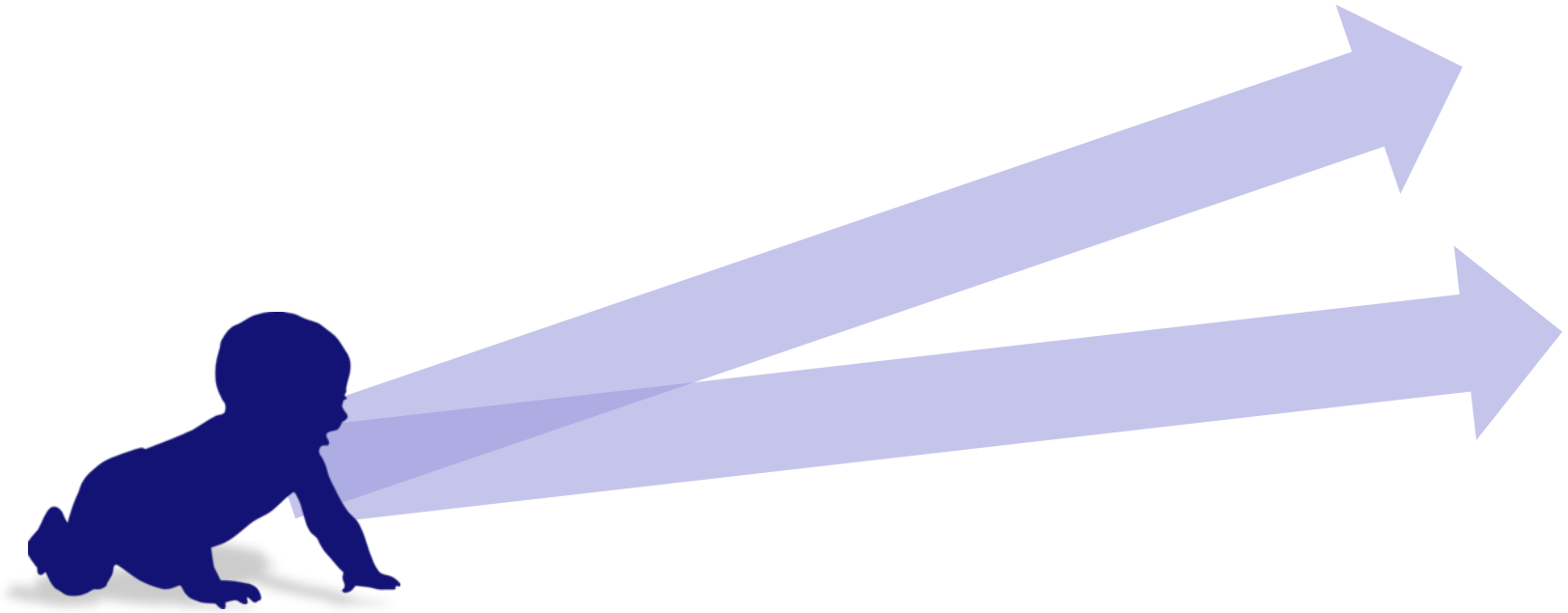


Using 21st Century Science to Change the Narrative for Policy and Practice Across Sectors

Early experiences affect lifelong health *and* learning



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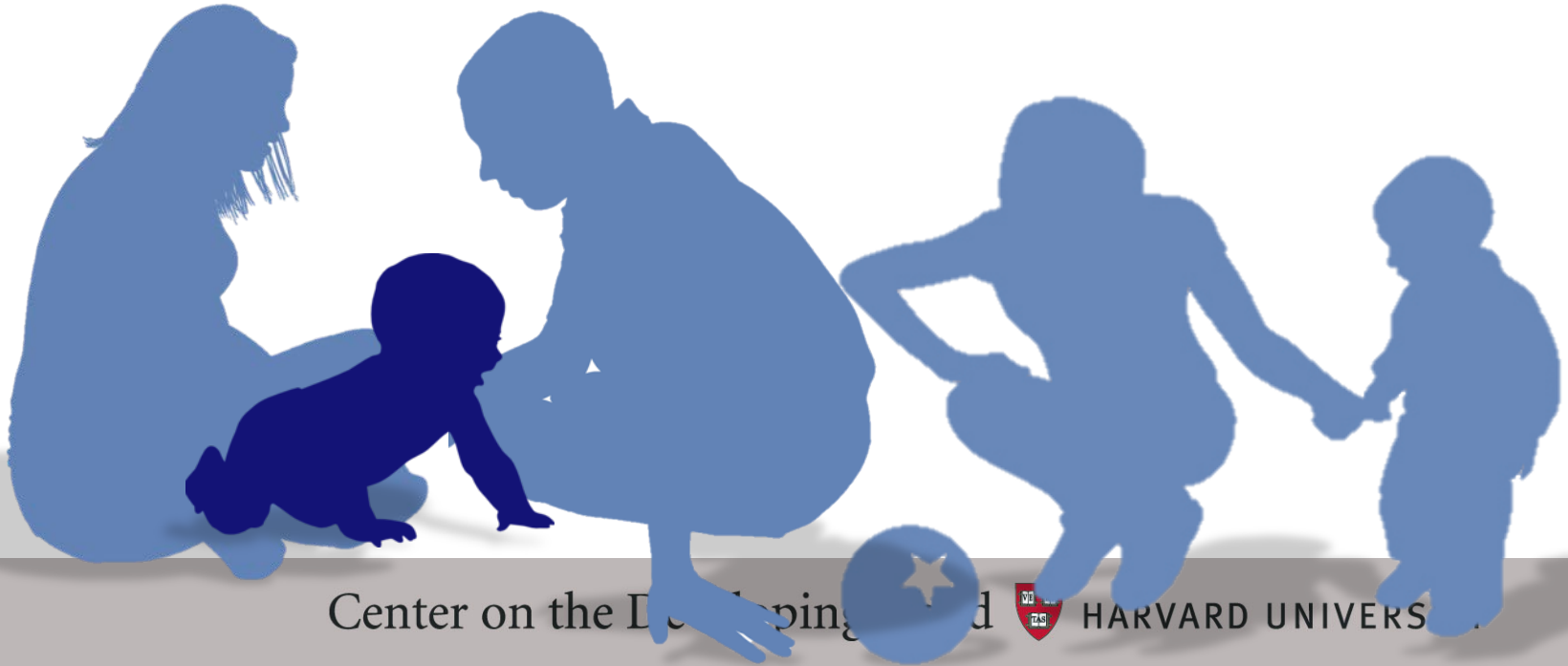

Generating Hypotheses to Guide New Intervention Strategies

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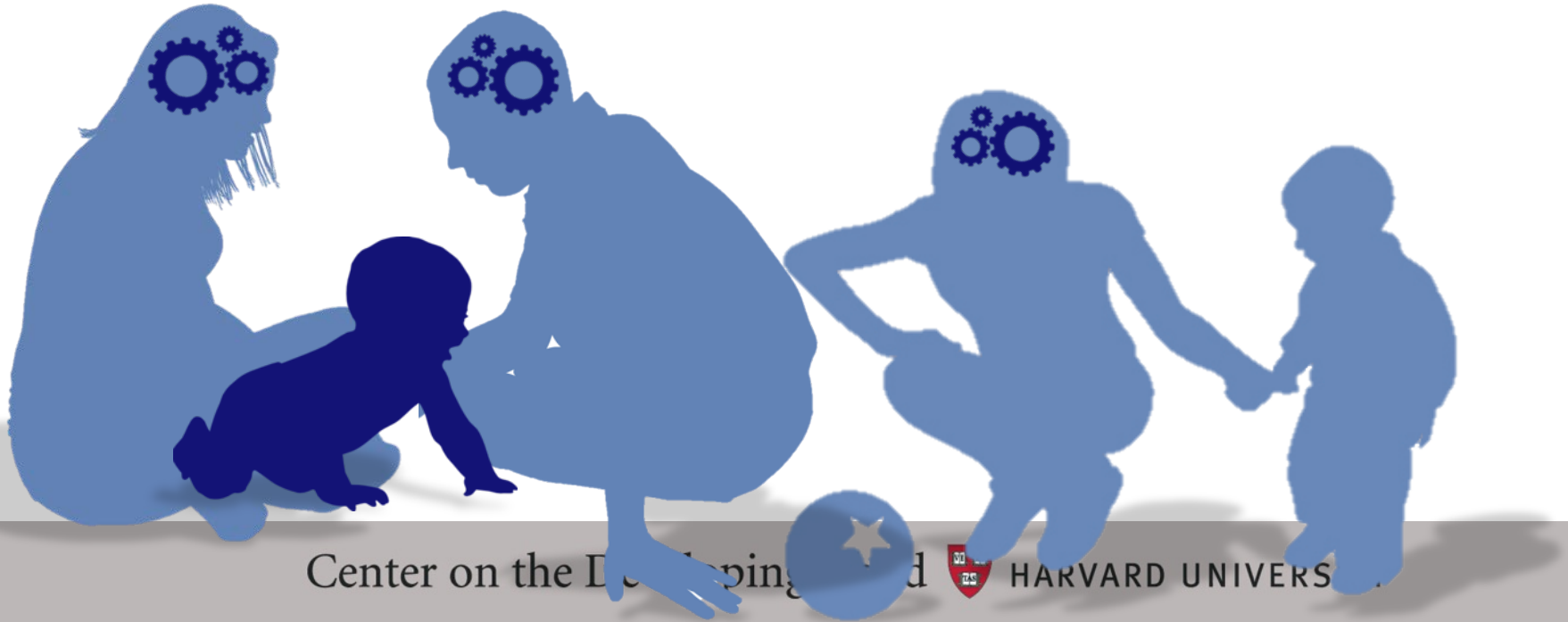
Healthy development requires protection *and* enrichment

1. Protection and enrichment for young children require capacity-building for their caregivers



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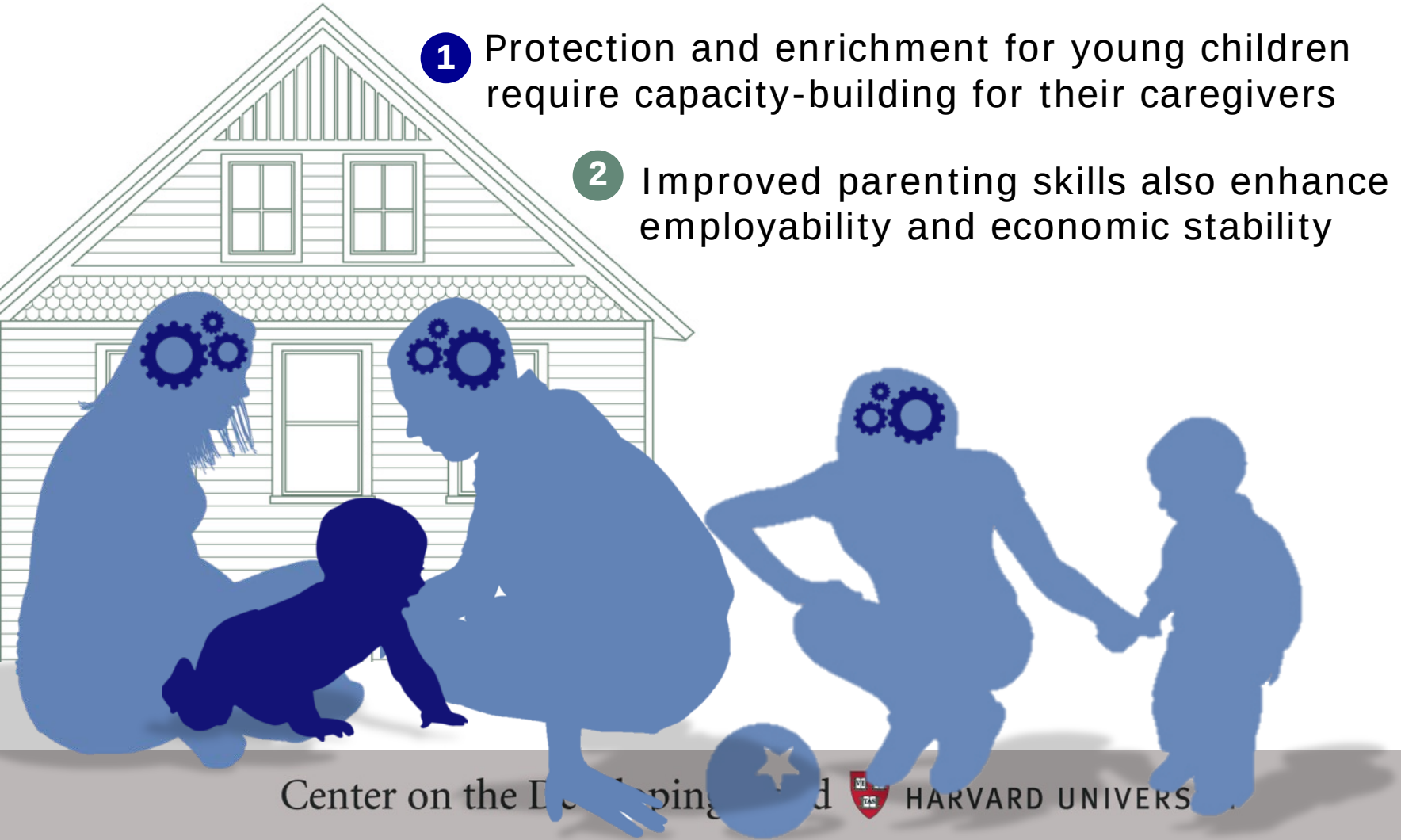
2. Improved parenting skills also enhance employability and economic stability



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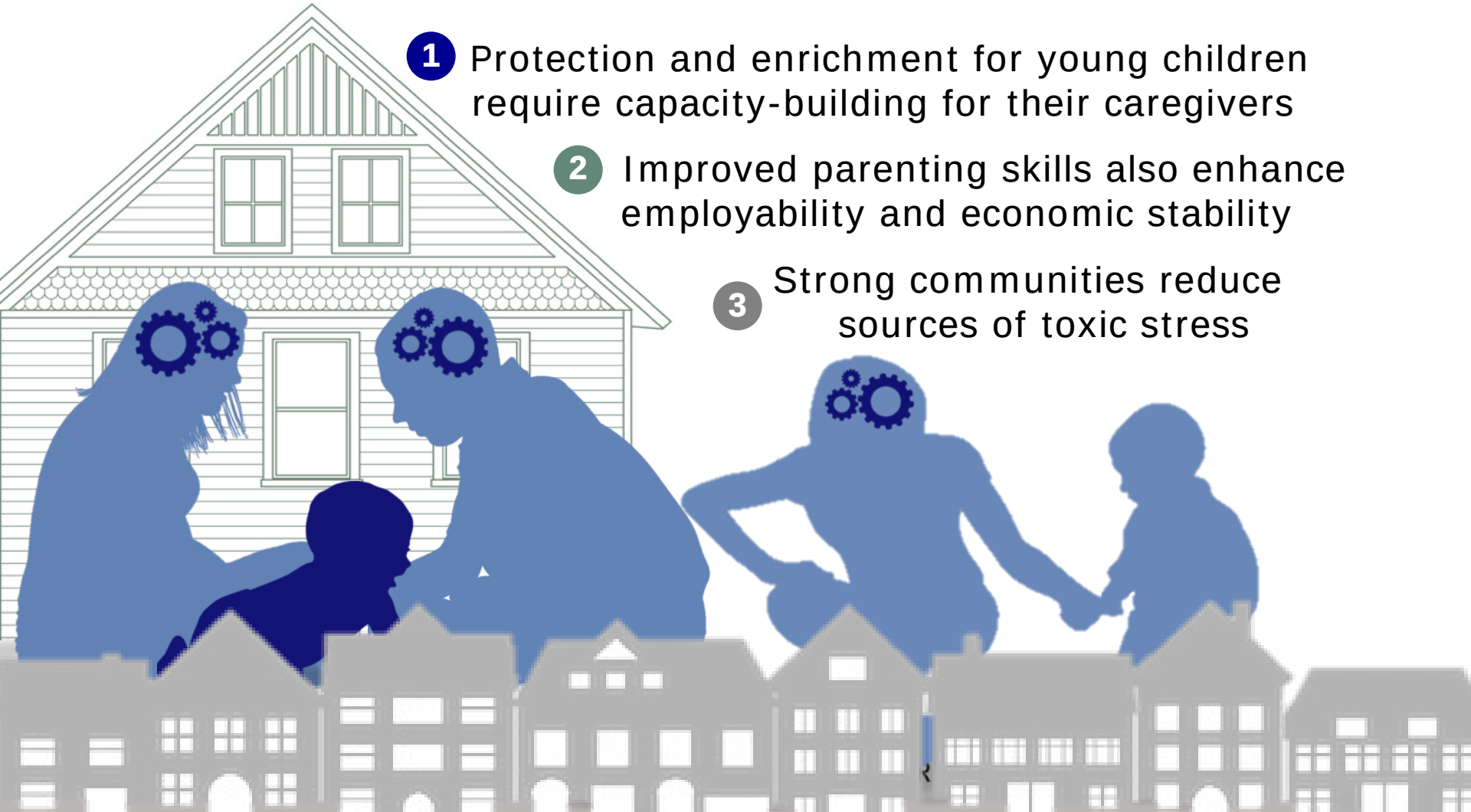
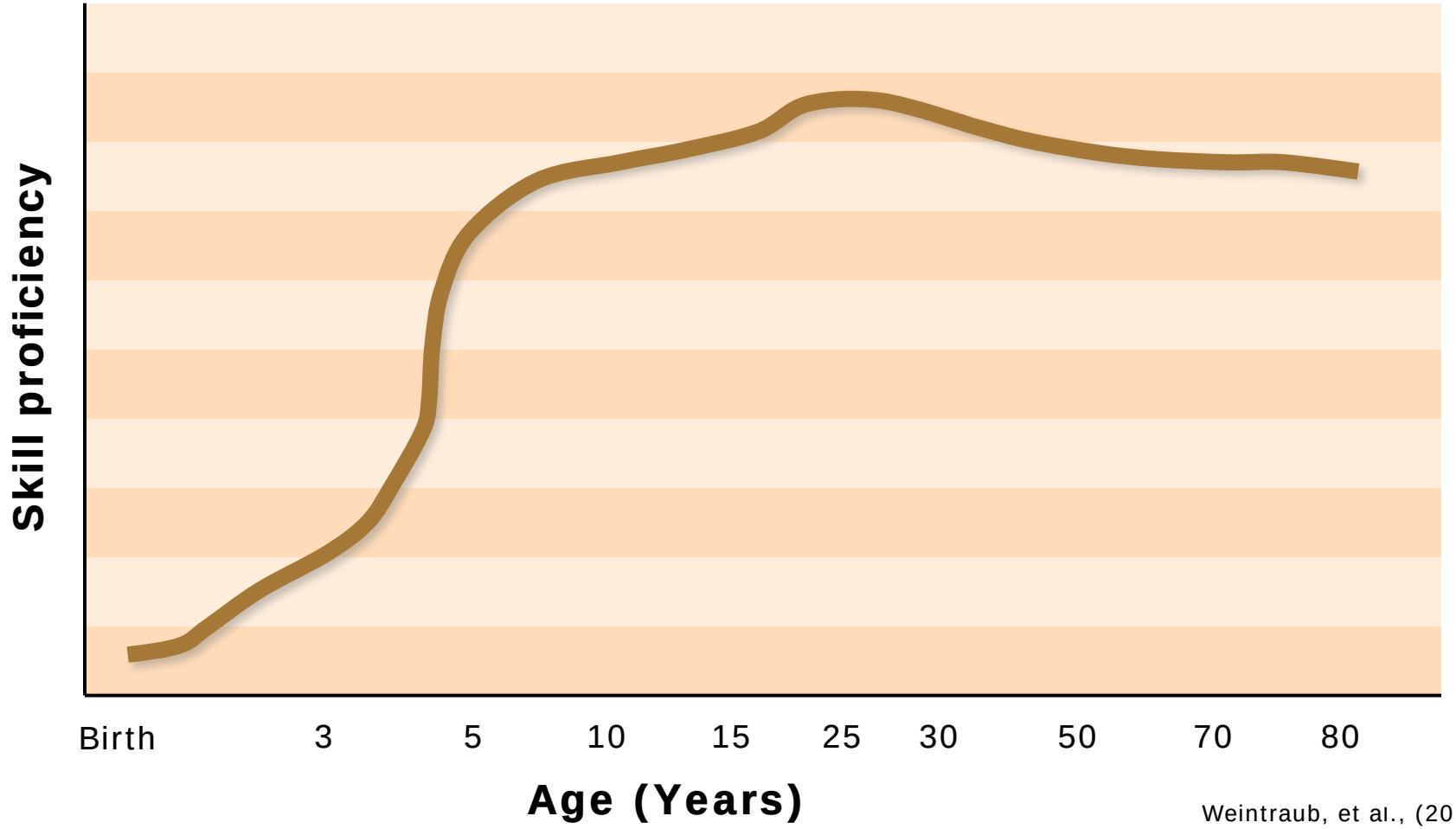
2. Improved parenting skills also enhance employability and economic stability
3. Strong communities reduce sources of toxic stress



Skill Building for Both Parenting and Employability Points to the Foundational Role of the Brain's "Air Traffic Control System"

These core capacities in "executive functioning" and "self-regulation" include the ability to focus and sustain attention, set goals and make plans, follow rules, solve problems, monitor actions, defer gratification, and control impulses.

The Opportunity: Circuits for Executive Function Skills Are Located in Brain Regions that Exhibit an Extended Period of Plasticity



Weintraub, et al., (2011)

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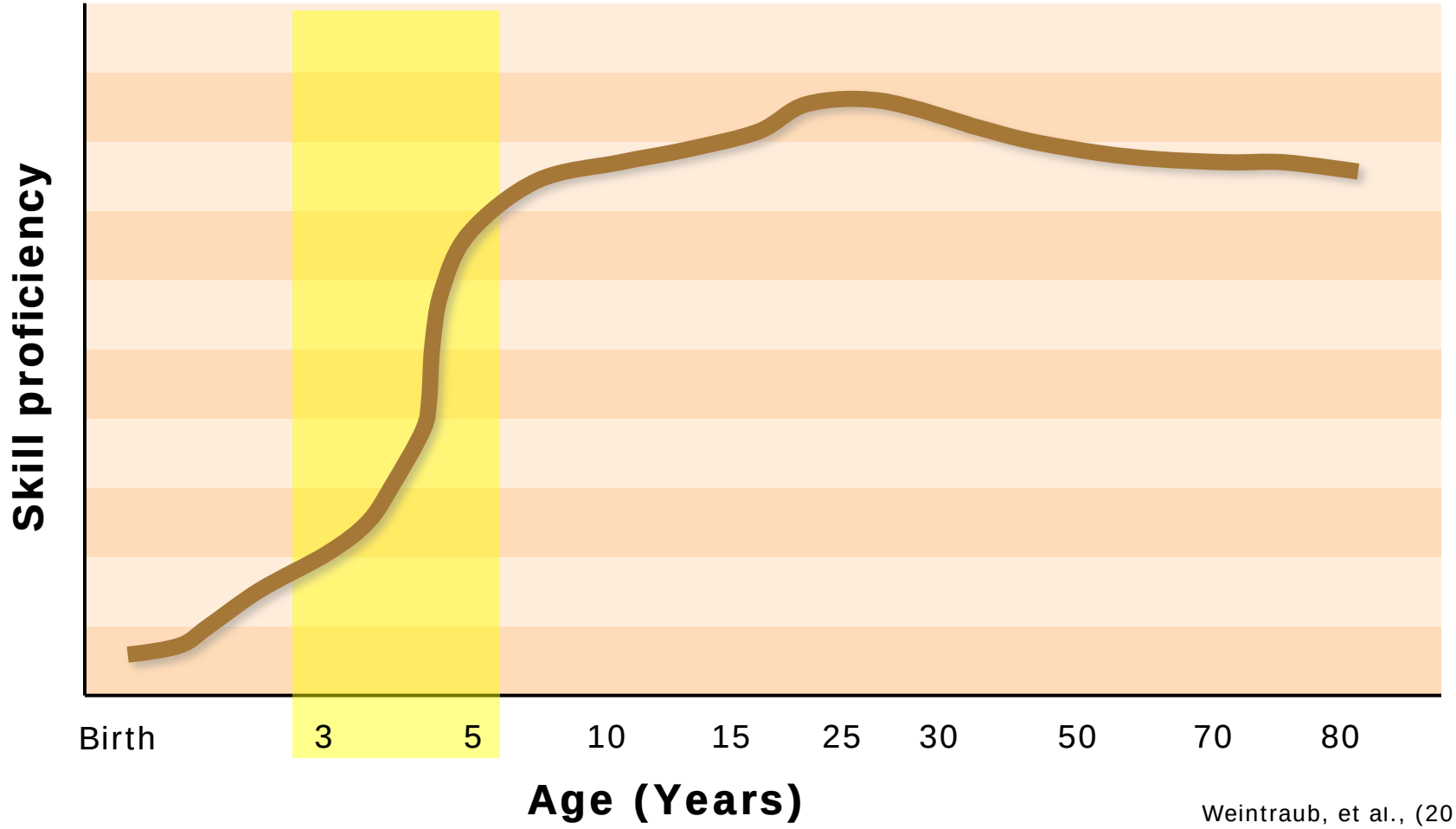

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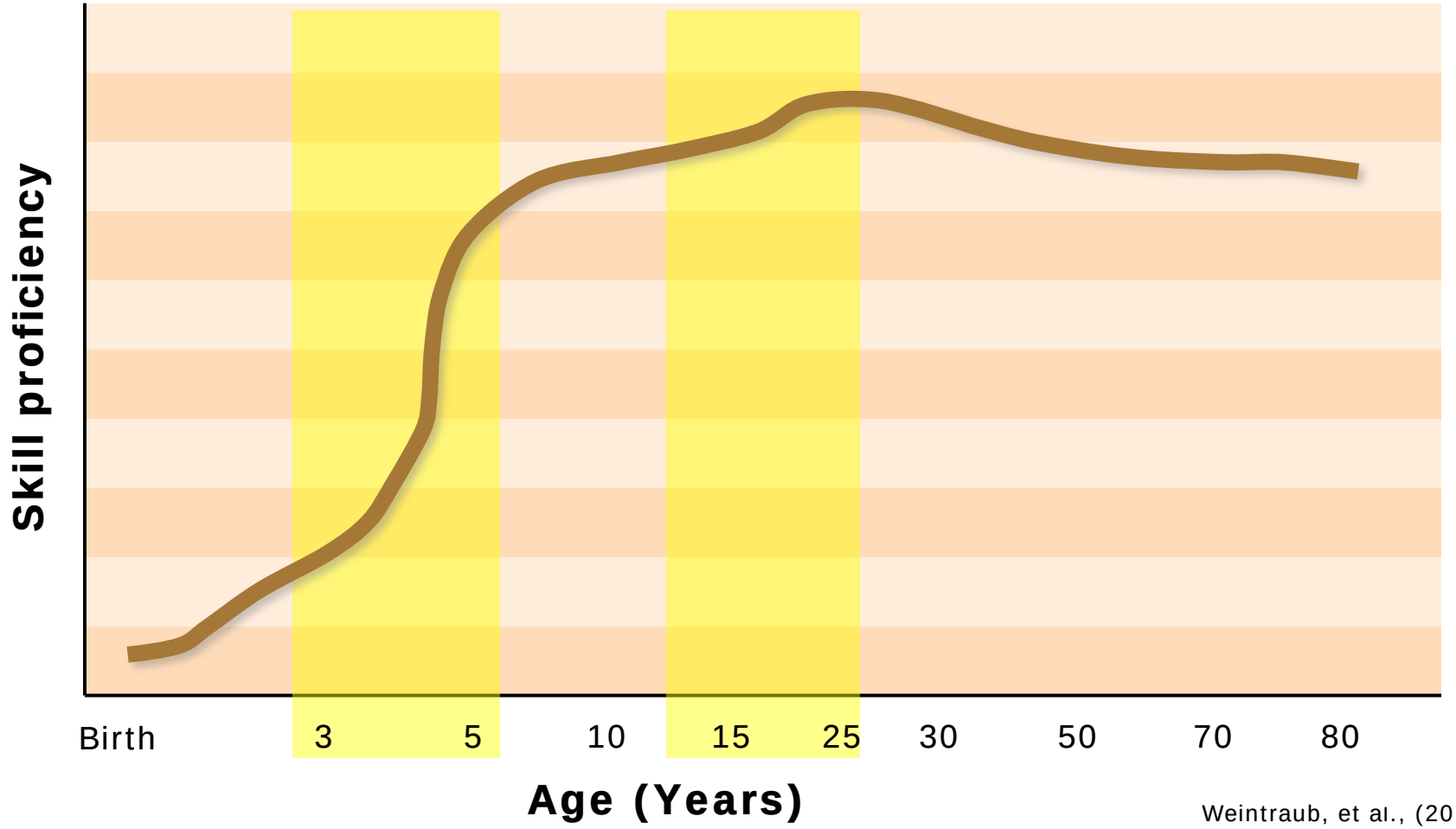

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Creating a Science-based Agenda to Improve Child Outcomes

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How can child-oriented actors in the international development community work together in new ways that lead to better outcomes for children facing adversity?

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