



Early Experiences Shape the Brain

Science can inform how we build a strong foundation for a prosperous society. The following set of core developmental concepts emerged from decades of rigorous research in neuroscience, developmental psychology, and the economics of human capital formation.

Four Numbers to Remember about Early Childhood

700

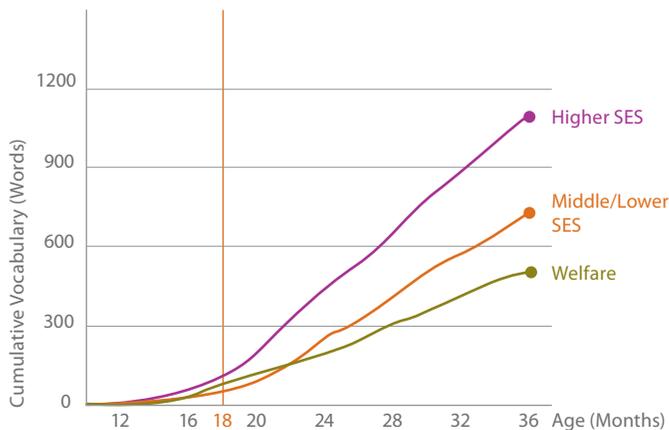
new neural connections are formed every second

In the first few years of life, 700 new neural connections are formed every second. Neural connections are formed through the interaction of genes and a baby's environment and experiences, especially "serve and return" interaction with adults, or what developmental researchers call contingent reciprocity. For better or worse, these are the connections that build brain architecture—the foundation upon which all later learning, behavior, and health depend.

Source: National Scientific Council on the Developing Child, 2009.

Disparities in Early Vocabulary Growth

Differences in vocabulary growth between children in low and high socio-economic households begin to appear as early as 18 months. And, as children grow toward school age, and enter school, the differences only get larger in the absence of intervention.



18 Months:

age at which vocabulary disparities begin to appear

Differences in the size of children's vocabulary first appear at 18 months of age, based on whether they were born into a family with high education and income or low education and income. By age 3, children with college-educated parents or primary caregivers had vocabularies two to three times larger than those whose parents had not completed high school.

Source: Hart, B., & Risley, T. (1995). Meaningful Differences in the Everyday Experiences of Young American Children. Baltimore, MD: Brookes.

90–100%

chance of developmental delays when children experience 6 or 7 risk factors

Significant adversity impairs development in the first three years of life—and the more adversity a child faces, the greater the odds of a developmental delay. In fact, risk factors such as poverty, caregiver mental illness, child maltreatment, single parenthood, and low maternal education have a cumulative impact: children exposed to six or seven of these risks face a 90–100 percent likelihood of having one or more delays in their cognitive, language, or emotional development.

Source: Barth, et al. (2007). Developmental Status and Early Intervention Service Needs of Maltreated Children. Washington, DC: U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.

3:1

odds of adult heart disease after 7 or 8 adverse childhood experiences

Early experiences carry lifelong effects—not just on cognitive and emotional development, but on long-term physical health as well. A growing body of evidence now links significant adversity in childhood to increased risk of a range of adult health problems, including diabetes, hypertension, stroke, obesity, and some forms of cancer. Adults who recall having seven or eight serious adverse experiences in childhood are three times more likely to have cardiovascular disease as an adult.

Source: Edwards, et al. (2005). "The wide-ranging health consequences of adverse childhood experiences." In Kathleen Kendall-Tackett and Sarah Giacomoni (eds.) Victimization of Children and Youth: Patterns of Abuse, Response Strategies, Kingston, NJ: Civic Research Institute.

What these four numbers tell us:

- Getting things right the first time is easier and more effective than trying to fix them later.
- Early childhood matters because experiences early in life can have a lasting impact on later learning, behavior, and health.
- Highly specialized interventions are needed as early as possible for children experiencing toxic stress, which occurs when prolonged exposure to adverse experiences triggers abnormal levels of stress hormones that can disrupt developing brain circuits.
- All of society benefits from investments in early childhood programs