



Center on the Developing Child

The Science of Early Childhood Development:

Closing the Gap Between What We Know and What We Do

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The Importance of Viewing the Needs of Young Children in a Broad Context

Beyond its intrinsic value as a compelling moral responsibility, the healthy development of all young children benefits all of society by providing a solid foundation for responsible citizenship, economic productivity, strong communities, sustainable democracy, and a healthy adult population.

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All Effective Early Childhood Policies and Services are Grounded in the Same Science and Guided by a Shared Core of Developmental Concepts

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Brains, Skills, and Health are Built Over Time

- **The early years of life matter because the ongoing interaction between early experience and genetics affects the architecture of the maturing brain and the function of the developing immune system.**
- **As it emerges, the quality of that architecture establishes either a sturdy or a fragile foundation for all the learning, behavior, and health that follow.**

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Brains and Skills are Built Over Time



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Brain Plasticity and the Ability to Change Behavior Decrease With Age

- **Brain circuits are built in a bottom-up sequence and stabilize over time, making them increasingly more difficult to alter.**
- **The window of opportunity for adaptive development remains open for many years, but the costs of remediation grow with age.**
- **It is more efficient, both biologically and economically, to get things right the first time than to try to fix them later.**

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Relationships are the “Active Ingredients” of Early Experience

- **Nurturing and responsive interactions build healthy brain architecture that provides a strong foundation for learning, behavior, and health.**
- **When protective relationships are not provided, persistent stress results in the activation of physiological systems (e.g., elevated blood cortisol) that can disrupt brain architecture by impairing cell growth and interfering with the formation of healthy neural circuits.**

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Early Childhood Adversity Can Influence a Range of Lifelong Outcomes

Research on the biology of stress helps explain some of the underlying causal mechanisms for differences in learning, behavior, and physical and mental health that are associated with poverty, maltreatment, and discrimination.

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Positive Stress

- **Moderate, short-lived stress responses, such as brief increases in heart rate or mild changes in stress hormone levels.**
- **Precipitants include the challenges of meeting new people, dealing with frustration, getting an immunization, or adult limit-setting.**
- **An important and necessary aspect of healthy development that occurs in the context of stable and supportive relationships.**

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Tolerable Stress

- **Stress responses that could disrupt brain architecture, but are buffered by supportive relationships that facilitate adaptive coping.**
- **Precipitants include death or serious illness of a loved one, a frightening injury, parent divorce, a natural disaster, terrorism, or homelessness.**
- **Generally occurs within a time-limited period, which gives the brain an opportunity to recover from potentially damaging effects.**

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Toxic Stress

- **Strong and prolonged activation of the body's stress management systems in the absence of the buffering protection of adult support.**
- **Precipitants include extreme poverty, physical or emotional abuse, chronic neglect, severe maternal depression, substance abuse, or family violence.**
- **Disrupts brain architecture and leads to stress management systems that respond at relatively lower thresholds, thereby increasing the risk of stress-related physical and mental illness.**

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Positive Stress



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Tolerable Stress

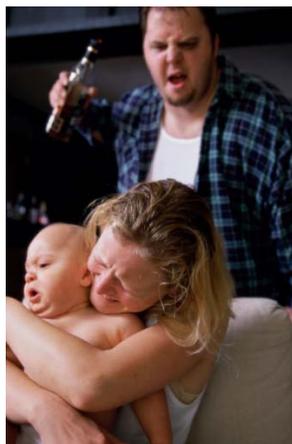


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Toxic Stress



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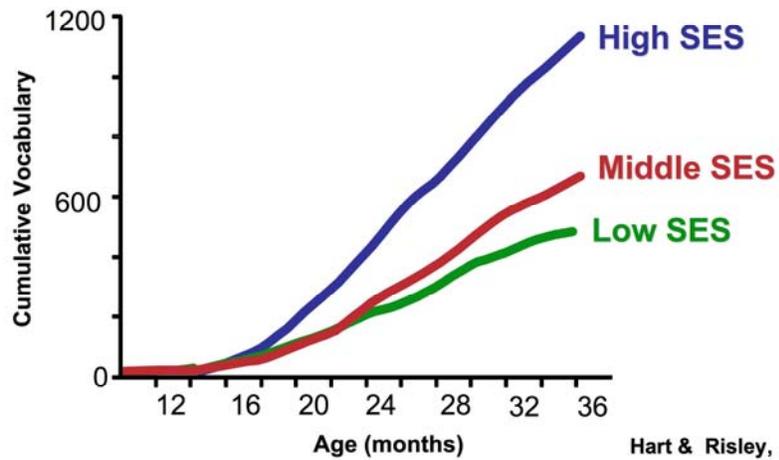
Data to Think About

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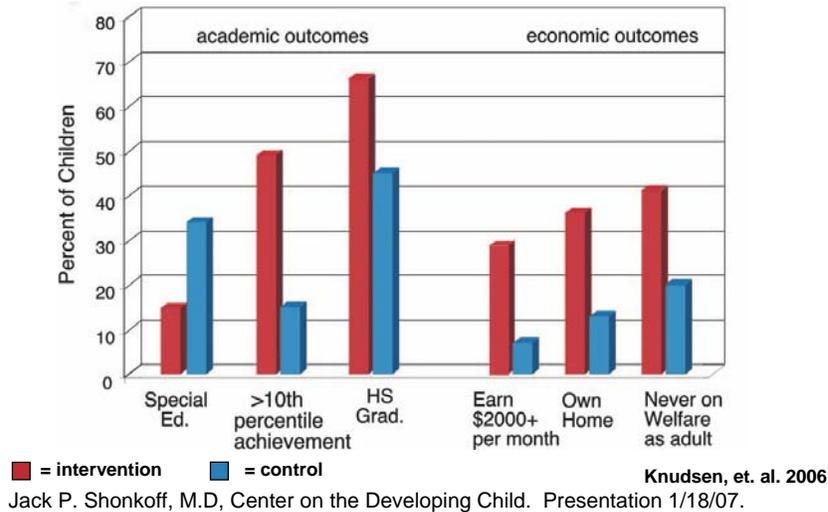
Early Growth in Vocabulary





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Perry Preschool and Abecedarian Outcomes



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Benefits of Early Intervention

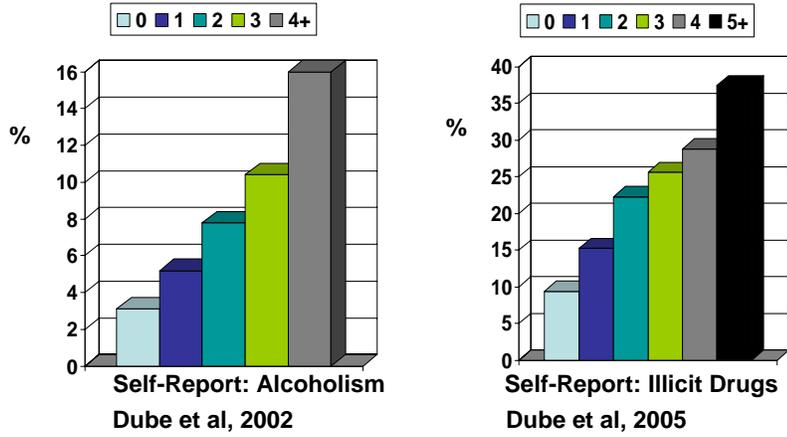
- Perry Preschool Project follow-up data at age 40 indicate a total benefit-cost ratio of 17:1 (4:1 for participants and 13:1 for the public), with annual internal rates of return of 18% (1% participant gain and 17% public benefit).
- Participant benefits are derived largely from higher earned income.
- Public benefits include higher tax revenues and lower costs for special education, welfare support, and incarceration.

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Adverse Childhood Events and Adult Substance Abuse



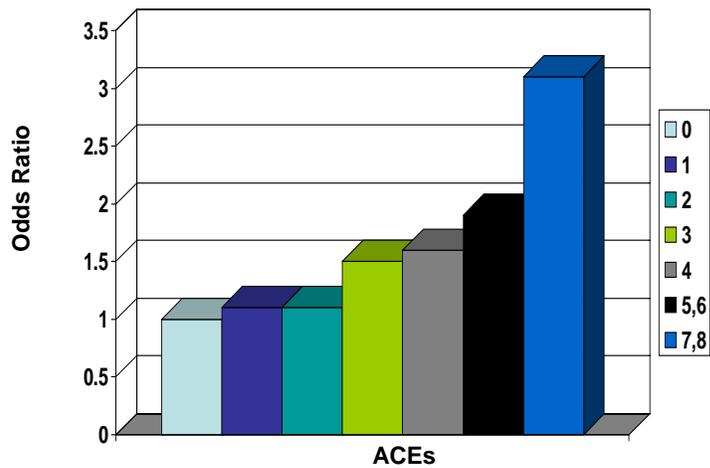
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Adverse Childhood Events and Adult Cardiovascular Disease

Source: Dong et al, 2004



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Using Science to Advance Effective Early Childhood Policies and Services

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Developmental Science Points Toward an Integrated Two-Pronged Approach to Promoting Healthy Development

- **Universal and coordinated access to prenatal care, primary health services, and early care and education options to support families, facilitate child well-being, and detect problems in health or learning that can benefit from early intervention.**
- **Targeted and early provision of services for children experiencing toxic stress to reduce disruptions of the developing nervous and immune systems that can lead to later impairments in learning, behavior, and both physical and mental health.**

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Quality Interventions Make a Difference

Services for vulnerable, young children can have positive impacts on brain development that generate a significant return on investment over a lifetime...

but they require the quality and sustainability that comes from low staff turnover and well trained personnel with expertise that matches the needs of the children and families served.

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Policies that Affect Child Health and Development Extend Beyond Access to Medical Care and Education

If we really want to promote better outcomes for children, then we must apply the science of early childhood and early brain development in an integrated fashion to a broad range of policies ...

including welfare reform, housing, family and medical leave, adult mental health, and environmental protection, among others.

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Young Children and their Families Need New Champions

The time has come for fresh leadership in both the public and private sectors to address significant inequalities in opportunity, beginning in the earliest years of life, as both a moral responsibility and a critical investment in our nation's social and economic future.

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**Website for the National Scientific Council
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