Driving Science-Based Innovation to Strengthen the Foundations of Lifelong Learning, Behavior, and Health

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Building a Thriving and Sustainable Society Begins By Protecting the Developing Brain in Early Childhood

Advances in neuroscience, molecular biology, genomics, and the behavioral and social sciences could be mobilized to catalyze more effective policies and practices across multiple sectors to strengthen the foundations of effective learning, lifelong health, economic productivity, and responsible citizenship.
Experiences Build Brain Architecture

Watch this video:
http://developingchild.harvard.edu/resources/multimedia/videos/three_core_concepts/brain_architecture/
Barriers to Educational Achievement Emerge at a Very Young Age

Significant Adversity Impairs Development in the First Three Years

Number of Risk Factors

Children with Developmental Delays

1-2 3 4 5 6 7

20% 40% 60% 80% 100%

Number of Risk Factors

Source: Barth, et al. (2008)
Biological “Memories” Link Maltreatment in Childhood to Greater Risk of Adult Heart Disease

Source: Danese, et al. (2008)
Toxic Stress Derails Healthy Development

Watch this video:
http://developingchild.harvard.edu/resources/multimedia/videos/three_core_concepts/toxic_stress/
Three Levels of Stress Response

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

Tolerable
Serious, temporary stress responses,
buffered by supportive relationships.

Toxic
Prolonged activation of stress response systems
in the absence of protective relationships.
Neglect is the Most Prevalent Form of Reported Child Maltreatment

Chronic Diseases Associated With Childhood Adversity Dominate U.S. Health Care Costs

Four of Top Ten Most Costly Diagnoses = $274 billion

Source: Agency for Healthcare Research and Quality (2010)
Current Conceptual Framework Guiding Early Childhood Policy and Practice

Readiness to Succeed in School

Parenting Education, Sound Nutrition, Stimulating Experiences, Primary Medical Care, and Health-Promoting Environments
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Significant Adversity

Impaired Development

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Creating a New Paradigm for Early Childhood Policy and Practice

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Healthy development requires protection and enrichment.
Generating Hypotheses to Guide New Intervention Strategies

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Center on the Developing Child, Harvard University
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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 neighborhoods reduce the burdens of adversity.
Skill Building for Parenting and Economic Self-Sufficiency Points to the Foundational Role of Executive Function and Self-Regulation Skills

These core dimensions of adult competence 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 Foundations of School Success are Strengthened by Building Caregiver Capabilities, Not Simply by Giving Parents Information

Impact of Early Childhood Education Programs (1960-2007)

Source: Grindal, et al. (2012)
Instability Disrupts the Stress Response But a Supportive Relationship Can Reverse the Effect


Morning Cortisol Levels

- Therapeutic Foster Care
- Typical (Community Control Group)
- Standard Foster Care

Months in Foster Care

Applying an Evolving Theory of Change in Different Domains

Kia Levey
New Haven MOMS Partnership

FAMILY MENTAL HEALTH SERVICES

Phil Fisher
University of Oregon and Oregon Social Learning Center

HOME VISITING AND CHILD WELFARE

Elisabeth Babcock
Crittenton Women's Union

ECONOMIC SELF-SUFFICIENCY

Juliet Morrison
Washington State Department of Early Learning

EARLY LEARNING

Center on the Developing Child, Harvard University
The Challenge: The Ability to Change Brains and Behavior Decreases Over Time

Source: Levitt (2009)

Birth 10 20 30 40 50 60 70

Normal Brain Plasticity Influenced by Experience

Physiological “Effort” Required to Modify Neural Connections

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

Weintraub, et al. (2011)
Building an Ecology of Innovation

**CLIMATE:** the policy, professional, and funding environment that creates incentives and influences the allocation of resources.

**SOIL:** a rich combination of people and contexts that cultivates promising seeds, maximizes the opportunity of favorable climate, and catalyzes broader impact.

**SEEDS:** breakthrough ideas that offer the potential for substantially more effective policies and practices that are affordable, replicable, scalable, and sustainable.
Applying a New Theory of Change Across Multiple Agencies in Washington State

**Economic Services Administration**  
WorkFirst assessment redesign.

**Juvenile Rehabilitation Administration**  
Building adolescent executive function through mindfulness training.

**Training for Managers**  
Cross-sector activities involving Economic Services, Vocational Rehabilitation, Children’s Administration, Aging & Disability Services.

**Professional Development, Standards & Pilots**  
Online modules, coaching, learning communities. Consultation with researchers on using EF assessment tools in NIH Toolbox.

**Public Health**  
Tobacco cessation program. Consultation with local health jurisdictions.
Building Strong Neighborhoods to Prevent or Reduce Precipitants of Toxic Stress

The MOMS Partnership in New Haven combines a neighborhood-based approach to maternal mental health with intervention strategies focused on economic self-sufficiency.

Promise Neighborhood initiatives are exploring community-based approaches to address local sources of toxic stress.
“If you always do what you always did, you will always get what you always got.”
Thomas Edison Had a Winning Strategy

“I have not failed. I've just found ten thousand ways that won't work.”