A Science-Based Framework for Early Childhood Policy

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Decades of Science from Many Disciplines
All Point to the Same Conclusion

The healthy development of children provides a strong foundation for healthy and competent adulthood, responsible citizenship, economic productivity, strong communities, and a sustainable society.
Neural Circuits are Wired in a Bottom-Up Sequence
(700 synapses formed per second in the early years)

Sensory Pathways (Vision, Hearing)
Language
Higher Cognitive Function

Brains and Skills Are Shaped by the “Serve and Return” Nature of Human Interaction
Cognitive, Emotional, and Social Capacities Are Inextricably Intertwined Within the Architecture of the Brain

Learning, behavior, and health are inter-related throughout the life cycle.

No single area of function develops independently—you can’t do one without the other!
Science Tells Us that Early Life Experiences Are Built Into Our Bodies

Just as positive early experiences build healthy brain architecture, adverse early experiences can weaken it.

The biology of stress illustrates how threat raises heart rate, blood pressure, and stress hormone levels, which can impair brain architecture, immune status, metabolic systems, and cardiovascular function.
The Biology of Adversity: Three Levels of Stress

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.
Toxic Stress Changes Brain Architecture

Typical neuron—many connections

Damage neuron—fewer connections

Sources: Radley et al. (2004)
Bock et al. (2005)
Implications for Policy and Practice from Program Evaluation Research
Effective Services Improve Relationships and Environments

Positive relationships and emotional, social, cognitive, and language learning experiences can be promoted both at home and through a range of evidence-based parent education, family support, early care and education, and intervention services.
Program Evaluation Research Helps Identify Effectiveness Factors

Not all programs are effective.

**Effectiveness factors** are key to distinguishing those programs that work from those that do not.

Our goal: to provide clearer guidance than the usual calls for “quality.”
Science Points Toward a 3-Tiered Approach to Ensure Healthy Development

- Broadly targeted interventions for children in poverty (e.g., income supports and early enrichment).
- Basic health and early care services to help all children build and sustain strong brains and bodies.
- Narrowly targeted, specialized services for children experiencing tolerable or toxic stress.

1 Universally available
2 Broadly targeted
3 Tiered approach
Tier 1: Basic health services and early care and education

Access to basic medical care for pregnant women and their children can help prevent threats to healthy development and provide early diagnosis and appropriate intervention when problems emerge.

Access to safe, stable care environments in the first years of life provides crucial developmental support to children in all families that need child care.
U.S. Child Care & Early Education Quality: Uneven at Best

Effectiveness Factors for Early Care and Education Programs for Children From Birth to Age 5

- Skilled and well-compensated personnel
- Small group sizes and high adult-child ratios
- Language-rich environment
- Developmentally appropriate “curriculum”
- Safe physical setting
- Warm and responsive adult-child interactions
Tier 2: Broadly targeted interventions such as income supports and early enrichment for children in poverty

For low-income families, work-based income supplements have been demonstrated to boost the early school achievement of young children.

Policy options include expanded income tax credits for low-income families, and welfare reform policies that “make work pay” by providing more income as parents make transitions from welfare to work.
Making Work Pay
Pays off in Student Achievement

Effects on Student Achievement vs. No Intervention

Source: Morris et al. (2005)
Tier 3: Targeted services for children experiencing tolerable or toxic stress
Sources of Toxic Stress in Young Children

- **Parental Substance Abuse**: 98 per 1,000
- **Postpartum Depression**: 130 per 1,000
- **Maltreatment**: 75 per 1,000

**Sources**
- Maltreatment: Finkelhor et al. (2005)
- Parental Substance Abuse: SAMHSA (2002)
- Postpartum Depression: O-Hara & Swain (1996)
Tier 3: Targeted services for children experiencing tolerable or toxic stress

For vulnerable parents expecting a first child, early, intensive support by a skilled home visitor can produce significant benefits.

Effectiveness factors for home visiting include:

• More highly trained visitors = larger effects.
• No evidence that 1-3 visits have any impact.
• Engaging and maintaining participation of families is a key challenge.
• Some successful programs specifically target populations at high risk with focused curricula.
Tier 3: Targeted services for children experiencing tolerable or toxic stress

For parents facing sources of toxic stress (mental health problems, depression, substance use, domestic violence), successful programs have specific content and curricula addressing the source of stress and it’s effects on children and families.

Example: Family Connections project addressing maternal depression in Head Start.

BUT few programs have been tested.

Sources: Beardslee, Gladstone, Wright, & Cooper, 2003; Chaffin et al., 2004; Fisher & Kim (2007)
Which Services?

Compare Costs to Benefits

Low cost services that have little impact are a waste of money. Responsible investments focus on effective programs that are staffed appropriately, implemented well, and improved continuously.

“Scaling up” effective programs continues to be a challenge. Our knowledge base regarding what works in quality improvement of early childhood care, education, and family support systems is in its infancy.
Preventive Intervention is More Efficient and Produces Higher Returns than Later Remediation

Heckman, J. (2007)
Cost/Benefit Analyses Show Positive Returns
Two Early Childhood Programs Demonstrate Range of Benefits to Society

Total Return per $1 Invested

- Returns to Society: $11.35 (4x $2.84)
- Returns to Individuals: $4.10

Crime-cost savings
- Special education, welfare, income taxes

Increased earnings
- Perry Preschool (through age 40): $3.24
- Abecedarian Project (through age 21): $1.57

$1.57
$2.28
$1.55
$11.35
$0.16
$2.28
$1.57
$16.14

Perry Preschool (through age 40) Abecedarian Project (through age 21)
Cost/Benefit for Nurse Family Partnership
(Dollars returned for each dollar invested)

Total Return per $1 Invested

Returns to Society
Reduced welfare, crime, child maltreatment and injury costs; increased tax revenues

Returns to Individuals
Increased earnings

Source: Karoly et al. (2005)
Future Directions

Increase the quality of services across agencies to address multiple risk factors:
- income/workforce/asset development,
- early childhood care and education (ECCE), and
- preventive health and mental health interventions.

Invest in the development and retention of a skilled early childhood workforce.

Improve programs for understudied and socially marginalized populations.
Science Points Toward a 3-Tiered Approach to Ensure Healthy Development

Narrowly targeted, specialized services for children experiencing tolerable or toxic stress.

Broadly targeted interventions for children in poverty (e.g., income supports and early enrichment).

Basic health and early care services to help all children build and sustain strong brains and bodies.
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www.developingchild.harvard.edu