Translating the Biology of Adversity Into More Effective Policy and Practice

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Jack P. Shonkoff, M.D. has documented that he has no financial relationships to disclose or Conflicts of Interest (COIs) to resolve.
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, cardiovascular function, and gene expression.
Decades of Early Childhood Investment Underscore the Need for New Ideas

Predominant focus on school readiness and primary health care, with limited development of new intervention approaches to address the biological embedding of significant adversity.

Dramatic advances in biomedical research and treatment of complex diseases such as cancer, cystic fibrosis, and HIV/AIDS, among others.

No significant reductions in social class or racial disparities in health outcomes.
Survival Rates for Acute Lymphocytic Leukemia Under Age 15 Have Increased Exponentially

Source: Hunger, Lu, Devidas (2012)
Racial/Ethnic Disparities in Infant Mortality Remain a Significant Challenge

Deaths per 1,000 live births

Source: National Center for Health Statistics, America’s Children: Key National Indicators of Well-Being (2011)
Disparities in Mortality Rates for Heart Disease Are Persistent But Improving

Source: National Center for Health Statistics (2011)
Disparities in Prevalence of Diabetes and Hypertension Present a Complex Picture

Adult population with diabetes

<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Mexican</th>
<th>Black or African American</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988-94</td>
<td>16%</td>
<td>8%</td>
<td>12%</td>
</tr>
<tr>
<td>1999-02</td>
<td>12%</td>
<td>4%</td>
<td>8%</td>
</tr>
<tr>
<td>2005-08</td>
<td>20%</td>
<td>4%</td>
<td>16%</td>
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</tbody>
</table>

Adult population with hypertension

<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Mexican</th>
<th>Black or African American</th>
</tr>
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<tbody>
<tr>
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<td>30%</td>
<td>35%</td>
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<tr>
<td>1999-02</td>
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<tr>
<td>2003-06</td>
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<tr>
<td>2007-10</td>
<td>45%</td>
<td>45%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Source: National Center for Health Statistics (2011)
Risk for Adult Heart Disease is Embedded in Adverse Childhood Experiences

Source: Dong, et al. (2004)
Biomarker Links Maltreatment in Childhood to Greater Risk for Adult Heart Disease

Source: Danese et al. (2008)
Current Conceptual Framework Guiding Early Childhood Services for Vulnerable Children

Significant Adversity

Impaired Development

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

Readiness to Succeed in School
“If you always do what you always did, you will always get what you always got.”
Creating a New Paradigm for Early Childhood Policy and Practice

Early experiences affect lifelong health and learning. Healthy development requires protection and enrichment.
Generating Hypotheses to Guide New Intervention Strategies

Early experiences affect lifelong health and learning.
Healthy development requires protection and enrichment.

1. Protection and enrichment for young children require capacity-building for adults.
2. Improved parenting skills also enhance employability and economic stability.
3. Strong communities reduce the burdens of adversity.
AAP Policy Statement (2012) Calls for Fundamental Change in Early Childhood Policy and Services
A New Frontier for Pediatrics at the Interface of Science, Practice, and Policy

Elucidating causal links between significant adversity in childhood and lifelong impairments in both physical and mental health.

Designing and testing new intervention strategies to reduce or mitigate the biological disruptions associated with toxic stress in the early years.

Formulating new, population-based approaches to health promotion and disease prevention that address social determinants early in the life course.
Special Thanks for the Collective Knowledge and Contributions of the Following Remarkable Groups

NATIONAL SCIENTIFIC COUNCIL ON THE DEVELOPING CHILD

NATIONAL FORUM ON EARLY CHILDHOOD POLICY AND PROGRAMS

Frontiers of INNOVATION

Center on the Developing Child  HARVARD UNIVERSITY