Supporting Educational Equity and Workforce Development: The Abecedarian Approach

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December 11-12, 2017
Jackson, MS
A foundational premise is that

...the health, education, and well-being of children forecast the future of communities, countries, and cultures:

- economically
- socially
- ethically
Major thesis

Children thrive to the extent that their families and society understand, value, and provide effective and timely supports for their health, education and, later, productive employment.

Biological and social risk factors are not randomly distributed in the U.S. population. Children from low SES families are at highly elevated risk for poor health, educational, and workforce outcomes.
Our RCTs that support our thesis (what children need to thrive) include:

2. Project CARE (1977 - 2016) N=83
Responsive Transactions are Central to Children’s Biological and Behavioral Development

Level of Influence:

INTERGENERATIONAL HISTORICAL CONTEXT

CURRENT BIOLOGICAL & BEHAVIORAL STATUS

SOCIAL & ENVIRONMENTAL TRANSACTIONS

SUBSEQUENT DEVELOPMENTAL STATUS

Prior Generation: Cumulative Biological & Social Histories

HEREDITY

PRENATAL ENVIRONMENT

SOCIOCULTURAL NORMS & PRACTICES

COMMUNITY NORMS & PRACTICES

CURRENT BIOLOGICAL & BEHAVIORAL STATUS OF INDIVIDUAL

CURRENT BIOLOGICAL & BEHAVIORAL STATUS OF FAMILY MEMBERS

TRANSACTIONS WITH OTHERS & ENVIRONMENTS

WITHIN FAMILY SUPPORTS

EXTRA-FAMILIAL SUPPORTS

EXTRA-FAMILIAL STRESSORS

WITHIN FAMILY STRESSORS

CHANGES IN INDIVIDUAL’S DEVELOPMENTAL STATUS

Delayed ———— Enhanced

CHANGES IN FAMILY MEMBERS’ DEVELOPMENTAL STATUS

PERCEPTIONS, MEMORY, NEUROBIOLOGY

adapted from Ramey & Ramey, American Psychologist, 1998
The “big picture” for understanding how to promote children's well-being

- Favorable political and economic climate
- Supportive child care and education context
- Good administrative, fiscal, and policy supports
- The child's family and neighborhood context

Positive child outcomes:
- Healthy, safe, and happy
- Positive social-emotional and self-regulation skills
- Good cognitive, communication, and school-readiness skills
What Constitutes Increased Learning Opportunities

• A safe and secure environment
• Timely and high-quality healthcare
• A wide variety of everyday successful learning experiences
• Opportunities that are delightfully challenging and individually paced
• Positive interactions with adults and peers that emphasize good conversational and coping skills
The Abecedarian Project (ABC)

**Treatment Group**
- Prenatal & birth visits
- Good stable nutrition
- Family social services
- Free primary health care
- Child development assessed

*The Abecedarian Approach to Early Childhood Education:*
- Enriched Caregiving
- Individualized, Comprehensive Curriculum
- Language Priority
- Conversational Reading

**Control Group**
- Prenatal and birth visits
- Good stable nutrition
- Family social services
- Free or low-cost health care
- Child development assessed
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Abecedarian</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=57</td>
<td>N=54</td>
<td></td>
</tr>
<tr>
<td>Mean Maternal IQ</td>
<td>85.4</td>
<td>84.5</td>
</tr>
<tr>
<td>Mean Maternal Age at Birth</td>
<td>19.6</td>
<td>20.3</td>
</tr>
<tr>
<td>Mean Maternal Education</td>
<td>10.5</td>
<td>10.2</td>
</tr>
<tr>
<td>% Below Poverty</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>% Black</td>
<td>94%</td>
<td>100%</td>
</tr>
<tr>
<td>% Female Headed Families</td>
<td>83%</td>
<td>75%</td>
</tr>
</tbody>
</table>
The Abecedarian Project: Two-Phase Randomized Controlled Trial (RCT)

The Abecedarian Project is a two-phase randomized controlled trial. The first phase is a preschool intervention for children from birth to age 8. The second phase involves a school-age intervention for children from age 5 to age 8. The trial includes randomization at birth and at age 5.

- **Preschool Intervention (N=57)**: 24 in School-Age Intervention, 23 in School-Age Control
- **Preschool Control (N=54)**: 25 in School-Age Intervention, 22 in School-Age Control
- **School-Age Intervention (N=25)**: Age 5 - 8
- **School-Age Control (N=22)**: Age 5 - 8

The timing of the intervention is as follows:
- **Birth to 8**: Preschool Intervention
- **Birth to 5**: Preschool Intervention and School-Age Intervention
- **Ages 5 - 8**: School-Age Intervention
- **None**: School-Age Control
Our Main Insights into Human Development from our R & D

• Socially vulnerable children are positively responsive to increased learning opportunities
Cognitive Scores (3-54 months) for Abecedarian Treatment Groups

- Control Group
- ECE Group
- National Average

months effect size

Ramey et.al., 2000 Applied Developmental Science
Percent of Abecedarian Sample in Normal IQ Range (≥84) by Age 4

- Treatment Group
- Control Group

<table>
<thead>
<tr>
<th>Child Age</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 Months</td>
<td>100%</td>
<td>93%</td>
</tr>
<tr>
<td>18 Months</td>
<td>100%</td>
<td>78%</td>
</tr>
<tr>
<td>36 Months</td>
<td>95%</td>
<td>49%</td>
</tr>
<tr>
<td>48 Months</td>
<td>95%</td>
<td>45%</td>
</tr>
</tbody>
</table>
• The timing of exposure to Early Childhood Education needs more systematic attention
Pre-Kindergarten Education Exposure and Cognitive Development

![Graph showing cognitive scores for different education exposures over age in months.]

- **No ECE**
- **Community ECE**
- **ABC ECE**

*Co-authors: Burchinal, Lee, and Ramey, 1989 Child Development*
• The more vulnerable the children the more they benefit from intensive high-quality programs – measured in a variety of ways
Children of Intellectually Disabled Mothers (<71 IQ) benefit at high rates in IQ outcomes

Modified from Martin, Ramey, & Ramey, *AJPH*, 1990
• High-quality early childhood education (in the first 3 years of life) is replicable in diverse areas with a consistent pattern of cognitive, linguistic, and social benefits
The ABC Intervention improved IQ scores for Premature, Low Birthweight Infants in 8 sites (Stanford-Binet at 36 mos for 2001-2500 gm LBW Group)

Infant Health and Development, JAMA, 1990
C. T. Ramey, AAAS, 1996
• High-quality early childhood education attenuates the cognitive gradient associated with socioeconomic status
Targeted ECE Works Especially Well for Children from Low Maternal Education Groups

Some High School (n=232) (n=162)  High School Graduate (n=166) (n=104)  Some College (n=134) (n=63)  College Graduate (n=76) (n=48)

Ramey et al., Pediatrics, 1992
Outcomes Affected Positively (*p<.01) by the Infant Health & Development Program

<table>
<thead>
<tr>
<th>Outcome</th>
<th>12 Months</th>
<th>24 Months</th>
<th>36 Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive Development</td>
<td>NS</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Adaptive and Prosocial Behavior</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Reduction in Behavior Problems</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Vocabulary</td>
<td></td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Receptive Language</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children’s Reasoning</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Positive Home Environment</td>
<td>NS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal-Child Interactive Behavior</td>
<td></td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Maternal Problem Solving</td>
<td></td>
<td></td>
<td>+</td>
</tr>
</tbody>
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Ramey 1999, adapted from Gross, Spiker, & Haynes, 1997, *Helping Low Birth Weight, Premature Babies*

Note: No negative effects discovered
• The mothers of vulnerable children experience educational and employment advances even as their children benefit
  • Younger mothers having their first child especially benefit from their children's early care and education
• The positive effects of high-quality ECE are broader and longer lasting than we imagined when this work began
Abecedarian Age 30 results:
Education, Family, and Health Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Early Ed</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduate</td>
<td>83.0%</td>
<td>72.0%</td>
</tr>
<tr>
<td>College Graduate</td>
<td>23.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Full-time Employment</td>
<td>75.0%</td>
<td>53.0%</td>
</tr>
<tr>
<td>Use of Public Assistance</td>
<td>3.9%</td>
<td>20.4%</td>
</tr>
<tr>
<td>Head of Household</td>
<td>78.9%</td>
<td>65.3%</td>
</tr>
<tr>
<td>Unmarried, 2+ Children</td>
<td>26.9%</td>
<td>38.8%</td>
</tr>
<tr>
<td>Excellent Health</td>
<td>69.0%</td>
<td>59.0%</td>
</tr>
</tbody>
</table>

Adapted from Campbell et al., *Developmental Psychology*, 2012
<table>
<thead>
<tr>
<th></th>
<th>Early Ed</th>
<th>Controls</th>
<th>Effect Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income to Needs Ratio (1=poverty, 3=middle class)</td>
<td>3.1</td>
<td>2.2</td>
<td>.25</td>
</tr>
<tr>
<td>Annual Earned Income</td>
<td>$33,400</td>
<td>$20,700</td>
<td>.32</td>
</tr>
<tr>
<td>Job Prestige Index</td>
<td>44.9</td>
<td>39.43</td>
<td>.38</td>
</tr>
<tr>
<td>Age at Birth of First Child</td>
<td>21.8 yrs</td>
<td>19.9 yrs</td>
<td>.52</td>
</tr>
</tbody>
</table>

Adapted from Campbell et al., *Developmental Psychology*, 2012
Significant Long-Term Health, Social, and Education Benefits for Abecedarian Approach (15 Months to 40+ Years Old)

- Intelligence (IQ)
- Reading and math skills
- Academic locus-of-control
- Social Competence
- Years in school
- College attendance
- Earned 4 yr college degree
- Full-time employment
- Cardiometabolic health
- Return on Investment
- Mothers’ education
- Mothers’ employment
- Cortical grey matter
- Prosocial behavior
- Maternal and paternal closeness
- Civic engagement
- Middle class neighborhoods
- Geographical mobility

- Grade Repetition
- Special Education placement
- Teen Pregnancies
- Smoking and drug use
- Teen depression
- Welfare use
- Overweight/BMI
- High blood pressure
- Lack of insurance
- Poor health
- Maternal deaths
Educational Group has more “very close” relationships with mothers

Proportional differences are significant $X^2(1, \text{N} = 78) = 8.403, p < 0.01$. 
Educational Group has more “very close” relationships with fathers

Proportional differences are significant $X^2(1, \ N = 78) = 4.997, p < 0.05$. 

<table>
<thead>
<tr>
<th>Comparison (N = 36)</th>
<th>Educational (N = 42)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Close</td>
<td>14%</td>
</tr>
<tr>
<td>Somewhat Close</td>
<td>7%</td>
</tr>
<tr>
<td>In the Middle</td>
<td>3%</td>
</tr>
<tr>
<td>Not Very Close</td>
<td>11%</td>
</tr>
<tr>
<td>Not Close at All</td>
<td>14%</td>
</tr>
</tbody>
</table>
Educational Group employed full-time (79%) more than Comparison Group (61%)
Educational vs Comparison Group has more material assets

- Own Home: Comparison (25%) vs Educational (38%)
- Own Car: Comparison (72%) vs Educational (88%)
- Own Computer: Comparison (69%) vs Educational (83%)
- Checking Account: Comparison (72%) vs Educational (91%)
- Savings Account: Comparison (67%) vs Educational (93%)

Educational vs Comparison Group has more material assets.
To download a copy of the paper presented today go to:
http://research.vtc.vt.edu/people/craig-ramey/
5 Contextual Megatrends

• Educational desegregation and civil rights
• Women’s liberation, feminism, and employment
• War on poverty, community action, and Head Start
• IDEA that provides education for all children
• Welfare Reform and emphasis on education and work

**All identified early childhood education as a critical part of a positive strategy