Economics of Early Childhood Development Investments

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Steve Barnett, PhD
Rutgers
Graduate School of Education
What are the Benefits of ECDI?
Impacts of ECD Investments

Educational Success and Economic Productivity

- Achievement test scores
- Special education and grade repetition
- High school graduation
- Behavior problems, delinquency, and crime
- Employment, earnings, and welfare dependency
- Smoking, drug use, depression

Decreased Costs to Government

- Schooling costs
- Social services costs
- Crime costs
- Health care costs (teen pregnancy and smoking)

Meta-Analysis of US Research Since 1960
N= 123 Intervention Studies

Effects on Cognitive Abilities (higher quality studies)
- .70 sd initial effect (.90 max)
- .35 sd at ages 5-10 (.60 max)
- .30 sd at age >10 (.45 max)

Effect on Social-Emotional & Behavior
- .14 sd no change over time, larger in higher quality

Effect on Schooling (grade rep., spec. ed., grad.)
- .15 sd no change over time

What Mattered in the US?

Meta-Analysis:
Direct Teaching
Comprehensive Programs less effective (dilute)

Other Studies:
All children benefit, disadvantaged gain more
Focus—children learn what is taught
Educated, trained, adequately paid staff
Quality, Quality, Quality, Quality
Meta-Analysis of Research Globally

N= 31 Intervention Studies (higher quality studies)

Cognitive Ability Effects
.33 sd at end of program
.32 sd at ages 5-18
.41 sd at age >18

.31 sd Effect: Social-Emotional & Behavior
.20 sd Effect: Schooling
.28 sd Effect: Health

Nores and Barnett (2009)
## EFFECTS BY INTERVENTION TYPE

**Meta-Analysis of Research Globally**

<table>
<thead>
<tr>
<th></th>
<th>NUTR</th>
<th>CASH</th>
<th>EDUC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>.17</td>
<td>.26</td>
<td>.37</td>
</tr>
<tr>
<td>Social</td>
<td>.46</td>
<td>.22</td>
<td>.31</td>
</tr>
<tr>
<td>Schooling</td>
<td>.18</td>
<td>---</td>
<td>.58</td>
</tr>
<tr>
<td>Health</td>
<td>.72</td>
<td>.15</td>
<td>.21</td>
</tr>
</tbody>
</table>

Nores and Barnett, 2009.
Example: Enhanced ECD in Mauritius

Intervention: Nutrition, Education, & Exercise
Ages 3-5, teacher-child ratio 1:5.5 v. 1:30

Outcomes: Decreased behavior problems, conduct disorder, crime and mental illness at ages 17-23

Malnourished children gained more

Nores and Barnett, 2009.
### Three Benefit-Cost Analyses with Disadvantaged Children

<table>
<thead>
<tr>
<th></th>
<th>Abecedarian</th>
<th>Chicago</th>
<th>High/Scope</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year began</strong></td>
<td>1972</td>
<td>1985</td>
<td>1962</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td>Chapel Hill, NC</td>
<td>Chicago, IL</td>
<td>Ypsilanti, MI</td>
</tr>
<tr>
<td><strong>Sample size</strong></td>
<td>111</td>
<td>1,539</td>
<td>123</td>
</tr>
<tr>
<td><strong>Design</strong></td>
<td>RCT</td>
<td>Matched neighborhood</td>
<td>RCT</td>
</tr>
<tr>
<td><strong>Ages</strong></td>
<td>6 wks-age 5</td>
<td>Ages 3-4</td>
<td>Ages 3-4</td>
</tr>
<tr>
<td><strong>Program schedule</strong></td>
<td>Full-day, year round</td>
<td>Half-day, school year</td>
<td>Half-day, school year</td>
</tr>
</tbody>
</table>

## Economic Returns to Pre-K for Disadvantaged Children

(In 2006 dollars, 3% discount rate)

<table>
<thead>
<tr>
<th>Program</th>
<th>Cost</th>
<th>Benefits</th>
<th>B/C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perry Pre-K</td>
<td>$17,599</td>
<td>$284,086</td>
<td>16</td>
</tr>
<tr>
<td>Abecedarian</td>
<td>$70,697</td>
<td>$176,284</td>
<td>2.5</td>
</tr>
<tr>
<td>Chicago</td>
<td>$ 8,224</td>
<td>$ 83,511</td>
<td>10</td>
</tr>
</tbody>
</table>

High/Scope Perry Preschool: Educational Effects

High/Scope Perry Preschool: Economic Effects at Age 27

High/Scope Perry Preschool:
Arrests per person by age 27

<table>
<thead>
<tr>
<th>Program</th>
<th>Felony</th>
<th>Misdemeanor</th>
<th>Juvenile</th>
<th>Total arrests</th>
</tr>
</thead>
<tbody>
<tr>
<td>No program</td>
<td>1.5</td>
<td>2.5</td>
<td>0.6</td>
<td>4.6</td>
</tr>
<tr>
<td>Program</td>
<td>0.7</td>
<td>1.2</td>
<td>0.5</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Perry Preschool: Crime Effects at 40

### Abecedarian: Academic Benefits

<table>
<thead>
<tr>
<th>Program group</th>
<th>No-program group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Education</td>
<td>31%</td>
</tr>
<tr>
<td>Grade Repeater</td>
<td>34%</td>
</tr>
<tr>
<td>HS Graduation</td>
<td>51%</td>
</tr>
<tr>
<td>4 Yr College</td>
<td>36%</td>
</tr>
</tbody>
</table>

### Chicago CPC: Academic and Social Benefits at School Exit

<table>
<thead>
<tr>
<th>Program group</th>
<th>No-program group</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS Graduation</td>
<td>50%</td>
</tr>
<tr>
<td>Special Education</td>
<td>25%</td>
</tr>
<tr>
<td>Grade Repeater</td>
<td>38%</td>
</tr>
<tr>
<td>Juvenile Arrest</td>
<td>25%</td>
</tr>
</tbody>
</table>


Benefits
- Welfare: $8K
- Child Care: $65K
- Education: $173K
- Earnings: $249,663
- Crime: $0
- Preschool: $15,386

Costs
- Welfare: $0
- Child Care: $15,386
- Education: $0
- Earnings: $0
- Crime: $0
- Preschool: $0

- **Benefits**
  - Education: $5K
  - Participant Earnings: $30K
  - Human Services: $36K
  - Child Care: $7,384
  - Total Benefits: $75,596

- **Costs**
  - Crime: $7,384
  - Preschool: $0

Costs range from $0 to $80,000, with the benefits totaling $75,596.

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>$8K</td>
</tr>
<tr>
<td>Maternal Earnings</td>
<td>$69K</td>
</tr>
<tr>
<td>Participant Earnings</td>
<td>$38K</td>
</tr>
<tr>
<td>Future Generations</td>
<td>$6K</td>
</tr>
<tr>
<td>Health</td>
<td>$18K</td>
</tr>
<tr>
<td>$43,983 (preK &amp; college-childcare)</td>
<td>$138,598</td>
</tr>
</tbody>
</table>

$0 $20,000 $40,000 $60,000 $80,000 $100,000 $120,000 $140,000
Program Quality Matters

• Well-designed
• Implemented as Designed
• Strong Staff
• Strong Supervision and Monitoring
• Use data to Inform Policy & Practice
Continuous Improvement Cycle

1. First Develop Standards
2. Measure and Assess Progress
3. Analyze and Plan
4. Implement – Professional Development and Technical Assistance
5. Measure and Assess Progress
Conclusions

- ECDI *can* be a strong public investments
  - Job and GDP growth
  - Decreased costs of social problems
- Benefits proportional to need
- High *quality* is important for gains
- A continuous improvement cycle to: develop and sustain quality
- Success is not cheap—but,
- Failure is far more expensive