Cost-Effectiveness of an Economic Empowering Intervention for AIDS-Affected Children in Uganda

Fred M Ssewamala ● Julia Shu-Huah Wang
Irwin Garfinkel ● Jane Waldfogel
Jennifer Nattabi ● Christopher Damulira
Joseph Kato Bakulu ● Abel Mwebembezi
Jeanne Brooks-Gunn ● Torsten Neilands
Sarah Meyer ● Flavia Mulindwa

Columbia University
International Center for Child Health & Asset Development (ICHAD)

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AN STEADY INCREASE IN ORPHANED AND VULNERABLE CHILDREN IN SUB-SAHARAN AFRICA..

Double Orphans: AIDS vs All Other Causes (Ages 0-17)

Source: UNICEF, 2006
BACKGROUND AND INNOVATION

• Prior Studies: Suubi and Suubi-MAKA (PI: Fred Ssewamala)
  • Interventions based on asset theory
  • What have we learned?
    • Savings (Ssewamala & Ismayilova, 2009; Ssewamala et al., 2009; Karimli, Ssewamala & Neilands, 2014)
    • Education (Ssewamala et al., in press.; Curley, Ssewamala & Han, 2010; Nabunya & Ssewamala, 2014)
    • Health & mental health functioning (Ssewamala et al., 2012; Wang et al., 2014; Karimli & Ssewamala, in press; Kagotho & Ssewamala, 2012)
    • Sexual risk taking behaviors (Ssewamala et al, 2010; Jennings, Ssewamala, Nabunya, in press).

• Bridges to the Future
  • Longer-term follow-up, larger sample size, and cost-effectiveness
BRIDGES TO THE FUTURE STUDY
(PI: Fred Ssewamala)

- **Research setting**
  - Rural Uganda (southeastern districts)

- **Samples**
  - 1410 children in 48 schools (randomly selected from 88 schools)

- **Study inclusion criteria**
  - AIDS affected orphans enrolled in the last 2 years of primary school (ages: 11-14 years) living within a family (not an institution)

- **Timeframe**
  - Baseline – 2-year intervention – 2-year follow-up
# BRIDGES TO THE FUTURE

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Usual Care</th>
<th>Bridges</th>
<th>Bridges PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usual care</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Mentorship</td>
<td></td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Workshops</td>
<td></td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Income generating activity training</td>
<td></td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Child Development Account</td>
<td></td>
<td>1:1</td>
<td>1:2</td>
</tr>
</tbody>
</table>

- Counseling
- Lunches
- Textbooks
- Scholastic materials

- Asset-building
- Future planning
DATA SOURCES

• Costs
  • Savings management information system
  • Project administrative records
    • Staff time sheet and salary records
    • Budget and expense records
• Effectiveness
  • In-person interview
  • Administrative data from schools
METHODS

• Calculate *per-person* costs of each study arm
• Obtain the effect using multilevel model to account for clustering at the school level
• Divide the per-person costs by the effect
HEALTH OUTCOMES: MENTAL HEALTH

CHILD DEPRESSION

HOPELESSNESS

Unit: Standard Deviation
COSTS

- Identify ingredients and cost ingredients
  - Direct costs: personnel, printing, travel, materials, etc.
  - Indirect costs: volunteer time, free meeting space, in-kind donation etc.

**Best practices in collecting cost data:**
- Record actual expenses rather than reporting budget
- Avoid retrospective data collection
CHALLENGES IN COST CALCULATION

• Research vs. program costs (50/50)
• Common expenses? Usual Care vs. Intervention Arms (20/40/40)
• Denominators
  • Intent to treat or treatment-on-the-treated
• Multiple-year adjustments
  • Inflation adjustment – Consumer Price Index (CPI)
  • Discounting – 3%
  • Exchange rates – Nominal or Purchasing Power Parity (PPP)
# PER CHILD COSTS (UGX)

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th></th>
<th></th>
<th>Year 2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Control</td>
<td>Bridges PLUS</td>
<td>Control</td>
<td>Bridges PLUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Usual Care</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Porridge</td>
<td>20,840</td>
<td>20,840</td>
<td>20,840</td>
<td>20,840</td>
<td>20,840</td>
<td>20,840</td>
</tr>
<tr>
<td>School uniform</td>
<td>12,209</td>
<td>12,209</td>
<td>12,209</td>
<td>11,987</td>
<td>11,987</td>
<td>11,987</td>
</tr>
<tr>
<td>Text books</td>
<td>17,193</td>
<td>17,193</td>
<td>17,193</td>
<td>17,193</td>
<td>17,193</td>
<td>17,193</td>
</tr>
<tr>
<td>Recruitment</td>
<td>5,847</td>
<td>5,847</td>
<td>5,847</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>IDA Account</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Account opening</td>
<td>--</td>
<td>27,414</td>
<td>27,414</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Initial account deposit</td>
<td>--</td>
<td>20,000</td>
<td>20,000</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Annual matched savings</td>
<td>--</td>
<td>16,330</td>
<td>38,613</td>
<td>--</td>
<td>4,447</td>
<td>4,492</td>
</tr>
<tr>
<td>Mentorship</td>
<td>--</td>
<td>55,490</td>
<td>55,490</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>IGA Training</td>
<td>--</td>
<td>15,512</td>
<td>15,512</td>
<td>--</td>
<td>23,934</td>
<td>23,934</td>
</tr>
<tr>
<td>Equipment</td>
<td>42,396</td>
<td>84,793</td>
<td>84,793</td>
<td>26,692</td>
<td>53,384</td>
<td>53,384</td>
</tr>
<tr>
<td>Personnel</td>
<td>64,837</td>
<td>129,674</td>
<td>129,674</td>
<td>39,407</td>
<td>78,814</td>
<td>78,814</td>
</tr>
<tr>
<td>Leveraged Resources</td>
<td>3,178</td>
<td>20,620</td>
<td>20,620</td>
<td>3,180</td>
<td>16,551</td>
<td>16,470</td>
</tr>
<tr>
<td><strong>Total per child costs</strong></td>
<td>109,595</td>
<td>286,736</td>
<td>309,020</td>
<td>87,822</td>
<td>142,895</td>
<td>142,940</td>
</tr>
</tbody>
</table>

Note: All prices are in nominal Uganda Schillings; denominator is the treated sample size

*Staff benefits include housing, health insurance, and social security.
COSTS

Per Child Costs: Year 1

Per Child Costs: Year 2

Note: All prices are in nominal Uganda Schillings; denominator is the treated sample size
# 2-YEAR TOTAL PER-CHILD COSTS

<table>
<thead>
<tr>
<th>Denominators</th>
<th>Exchange Rate</th>
<th>Usual Care ($)</th>
<th>Bridges ($)</th>
<th>Bridges PLUS ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intent to Treat</strong></td>
<td>Nominal</td>
<td>104</td>
<td>364</td>
<td>373</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>255</td>
<td>890</td>
<td>912</td>
</tr>
<tr>
<td><strong>Treatment on the Treated</strong></td>
<td>Nominal</td>
<td>118</td>
<td>418</td>
<td>426</td>
</tr>
<tr>
<td></td>
<td>PPP</td>
<td>289</td>
<td>1022</td>
<td>1044</td>
</tr>
</tbody>
</table>

Note: All prices are in 2012 real USD and use a 3% annual discount rate.
Data sources for CPI and exchange rates: Uganda Central Bank & World Bank
COST-EFFECTIVENESS

How much does it cost to achieve a $0.2$ standard deviation of decrease on depression from baseline to 24-month follow-up compared to Usual Care?

<table>
<thead>
<tr>
<th></th>
<th>Exchange Rate</th>
<th>Bridges</th>
<th>Bridges PLUS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Effect</strong></td>
<td>-0.281*</td>
<td>-0.308**</td>
<td></td>
</tr>
<tr>
<td><strong>Intent to Treat</strong></td>
<td>Nominal $260</td>
<td>$269</td>
<td></td>
</tr>
<tr>
<td>PPP</td>
<td>$635</td>
<td>$657</td>
<td></td>
</tr>
<tr>
<td><strong>Treatment on the Treated</strong></td>
<td>Nominal $300</td>
<td>$308</td>
<td></td>
</tr>
<tr>
<td>PPP</td>
<td>$733</td>
<td>$755</td>
<td></td>
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</table>
COST EFFECTIVENESS

- Costs to achieve a 0.2 standard deviation improvement of outcome.

Note: Costs are per-person costs (based on treatment-of-the-treated sample) expressed in 2012 real USD. Effects are relative to Usual Care from baseline to 24-month follow-up.
SUMMARY

• Intervention shown to have positive effects on Bridges and Bridges PLUS youths
  • Mental health (and health, savings, etc.)
• Mixed evidence on cost-effectiveness of providing a higher level of saving incentive
• Longer-term effects of the intervention and the match incentive: To be determined
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Fred M. Ssewamala, Ph.D.
FS2114@COLUMBIA.EDU

Julia Shu-Huah Wang, MSW
JW2674@COLUMBIA.EDU

Columbia University
## SAMPLE DESCRIPTION

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Control (N=487)</th>
<th>Bridges (N=396)</th>
<th>Bridges PLUS (N=500)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>12.75</td>
<td>12.56</td>
<td>12.71</td>
</tr>
<tr>
<td>Female</td>
<td>54%</td>
<td>57%</td>
<td>56%</td>
</tr>
<tr>
<td>Household size</td>
<td>6.43</td>
<td>6.29</td>
<td>6.32</td>
</tr>
<tr>
<td>Number of children in household</td>
<td>3.18</td>
<td>3.14</td>
<td>3.23</td>
</tr>
<tr>
<td>Parents</td>
<td>37%</td>
<td>40%</td>
<td>43%</td>
</tr>
<tr>
<td>Grandparents</td>
<td>25%</td>
<td>23%</td>
<td>25%</td>
</tr>
<tr>
<td>Uncle/Aunt</td>
<td>30%</td>
<td>27%</td>
<td>25%</td>
</tr>
<tr>
<td>Sister/Brother/Cousin</td>
<td>8%</td>
<td>11%</td>
<td>7%</td>
</tr>
</tbody>
</table>
BRIDGES

Low Costs

Physical Health

Hopelessness*

Self Concept

High Costs

0.2 Standard Deviation

Strong Effects

Weak Effects

BRIDGES PLUS

Depression*

Self Concept*

Hopelessness

Physical Health*

* MORE COST-EFFECTIVE