Assessing the Impact of Economic Empowerment Interventions and Programs on Educational Outcomes of Orphaned Adolescents: Findings from a Randomized Experiment in Uganda

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Abstract: This paper examines the effect of participating in a family-based economic empowerment intervention on the educational performance and school transition among orphaned adolescents in Uganda. The Bridges to the Future Study utilized a cluster-randomized experimental design with five waves of data collected from 1410 orphaned adolescents (average age = 12.7 years). Adolescents were recruited from 48 primary schools and randomly assigned to either the control arm (n=496) or one of the two treatment arms i.e. Bridges arm (n= 402) and Bridges Plus arm (n=512) receiving the economic empowerment intervention. Ordinary Least Squares (OLS) regression and binary logistic regression analyses were conducted to examine the effect of the intervention on academic performance and school transition respectively. Compared with adolescents in the control condition, at 48-months follow-up, adolescents receiving the intervention had better school outcomes. Specifically, participants in the Bridges arm (b=-3.78, 95% CI=-4.92, -2.64, p≤0.001) and Bridges Plus arm (b=-2.23, 95% CI=-3.32, -1.13, p≤0.001) scored better PLE grades compared to the control condition. In addition, the odds of transitioning to post-primary education were 1.69 times higher for participants in the Bridges arm (OR=1.69, 95% CI= 1.27, 2.25, p≤0.001) and 1.66 times higher for participants in the Bridges Plus arm (OR=1.66, 95% CI= 1.28, 2.18, p≤0.001), relative to the control condition. These findings suggest that programs which target financial insecurity may have a positive impact on the educational achievement and progression of adolescents orphaned and made vulnerable by HIV/AIDS. Therefore, there is a need to consider incorporating economic empowerment interventions within the development of educational policy in developing countries, especially those in sub-Saharan Africa.
Introduction

Provision of education opportunities is considered one of the key components of the current safety net programs for Orphans and Vulnerable Children (OVCs) in communities heavily affected by HIV/AIDS, especially those in sub-Saharan Africa (Hunter & Williamson, 2003). Through education, orphaned children –defined as children under 18 years or age, who have lost one or both biological parents to HIV/AIDS, can realize the possibility of productive employment, minimize the risk of being exploited and becoming infected with HIV (Matshalaga & Powell, 2002). As a result, several countries, including Uganda, have instituted Universal Primary Education (UPE) –one of the United Nations Millennium Development Goals (MDGs), where each child of school going age is allowed to attend primary school without paying tuition. Unfortunately, even with the introduction of UPE, children orphaned as a result of HIV/AIDS are at a greater risk of poor schooling and educational outcomes compared to non-orphans and children orphaned due to other causes. Specifically, orphans have lower school enrollment rates, they are more likely to miss school, less likely to be at a proper education level and are more likely to drop out of school completely compared to their counterparts (Bicego, et. al, 2003; Case, Paxton & Ableidinger, 2004; Evan & Miguel, 2004; Kasirye & Hisali 2010; Ssengendo & Nambi, 1997).

One of the strategies advanced to address the needs of OVCs, including educational attainment and achievement is strengthening the capacity of families to protect and care for orphaned children and adolescents through improving household economic capacity and providing psychosocial support to affected children and their caregivers. As a result, there has been a growing interest in asset-based economic strengthening programming, specifically those that utilize children savings accounts, influenced by the view that the more opportunities children and young people have to participate in such programs, the more likely they are to accumulate and report a range of positive protective factors, and to sustain their health and wellbeing.

Indeed, a number of studies, both in the developed world and developing countries, have demonstrated that participating in asset-based interventions, especially those that utilize youth matched savings, are associated with positive outcomes, ranging from improved economic outcomes, educational outcomes, and improved health and psychosocial wellbeing (Curley, Ssewamala & Han, 2010; Elliot, 2009; Han, Ssewamala, & Wang, 2013; Kim & Sherraden, 2011; Ssewamala, Han, & Neilands, 2009; Ssewamala, Han, Neilands, Ismayilova, & Sperber, 2009; Ssewamala & Ismayilova, 2009). In terms of educational outcomes, studies conducted in Uganda among orphaned adolescents have documented positive changes in future educational planning, higher levels of confidence in the future, improved school grades and school attendance (Curley et al., 2010; Ssewamala & Ismayilova, 2009).
However, although these studies have documented positive outcomes, they have all been tested using smaller samples, with relatively short intervention and follow-up periods, as well as comparing only two groups. In addition, none of the studies examined participants’ transition rates and progression from primary school to post-primary education, yet post-primary education is equally important in defining a child’s career path in preparation for their future if they are to contribute to a country’s development economically, politically and socially. This study therefore examines the impact of participating in an economic empowerment intervention on academic achievement and school transition among a relatively large sample of orphaned adolescents, using longitudinal data collected over 5 years, and comparing three study groups. This area is important as researchers try to develop strategies to address the challenges associated with the implementation of universal primary education and students’ outcomes in sub-Saharan Africa.

Methods

Study Sample
This paper utilized data from Bridges to the Future study (hereafter Bridges study), a five-year (2011-2016) randomized controlled trial funded by the National Institute of Child Health and Human Development (NICHD Grant #1R01 HD070727-01). The Bridges study aimed at evaluating the impact of an economic empowerment intervention on the health and mental health, economic, and social outcomes, including educational achievement of adolescents orphaned as a result of HIV/AIDS in Southern Uganda. Adolescents were eligible to participate if they: 1) had lost one or both biological parents to HIV/AIDS, 2) lived within a family, not an institution, and 3) in grades 5 or 6 of a public, government-aided primary school. Participants were recruited from 48 public primary schools in 4 geopolitical districts of Masaka, Rakai, Kalungu, and Lwengo in southern Uganda – a region heavily affected by HIV/AIDS. A total of 1,410 orphaned adolescents, aged 10-16 years at study initiation were randomly assigned to either the control group (n=496) which received bolstered usual care services for orphaned children, such as textbooks, notebooks, school uniforms and school lunches; or to two treatment conditions: Bridges arm (n=402) and Bridges Plus arm (n=512). Both treatment arms received bolstered usual care services mentioned above plus three intervention components: 1) an economic empowerment intervention in the form of matched savings accounts (matched at a ratio of 1:1 for the Bridges arm and 2:1 for Bridges Plus arm). The accumulated savings plus the matched funds were intended to pay for participants’ post-primary education and/or start a microenterprise business; 2) a mentorship program conducted by peer-mentors; and 3) financial planning and microenterprise development workshops. Detailed information on the design and implementation of the Bridges study has been published elsewhere (Ssewamala et al, 2014; Ssewamala et al, 2015; Nabunya et al, 2014).
**Measures**

Data for this study was collected at baseline, 12-months, 24-months, 36-months, and 48-months post baseline. Each study participant responded to a 90-minute survey administered by trained Ugandan interviewers. All measures used in the Bridges study were tested from previous studies for orphaned children in Uganda (Ssewamala et al, 2010; Curley et al, 2010; Ssewamala et al, 2009). The primary outcomes for this analysis were adolescents’ academic performance and school transition.

Academic performance was measured using scores from Primary Leaving Examinations (PLE), the national standardized examinations administered by the Uganda Ministry of Education and Sports (MOES) to all students completing primary school. The aggregate scores for PLE range from 4(best) to 36(worst). All students intending to enroll in post-primary education including vocational institutions must complete and pass the PLE. The average score for participants in the current study who completed PLE (n=856) was 24.57 aggregates, indicating that the majority passed in the second division. School transition was measured by participants’ enrollment into post-primary education, i.e. secondary/high school or vocational institutions. Specifically, participants were asked: “Which class/grade are you currently in?” Responses were then coded as “1” for those who had transitioned to post-primary education and “0” for those who had not transitioned. At 48-months follow-up, only 42% (n=571) of participants had transitioned to either secondary schooling or vocational institutions. Fifty-eight percent (58%, n=839) had not transitioned to post-primary education i.e. had either dropped out of school, had not completed primary school at the time of interviews, or lost to follow up.

The independent variable was participation in the Bridges intervention. Participants’ demographic and household characteristics such as age, gender, orphanhood status (single or double orphan), the child’s primary caregiver, household size, household assets, availability of personal savings and family cohesion were included in the analysis as control variables.

**Data Analysis**

Data was analyzed using Stata software version 12. Sample characteristics were analyzed and compared between the three study arms i.e. the control arm, Bridges arm and Bridges Plus arm. Specifically, Chi square tests of independence and Analysis of Variance (ANOVA) were conducted. In addition, Ordinary Least Squares (OLS) regression analysis was conducted to examine the effect of the intervention on academic performance (PLE scores). Binary logistic regression analysis was conducted to examine the effect of the intervention on school transition. In both regression models, we controlled for participants’ demographics and household characteristics. Due to attrition, the total sample at 48-months follow-up was reduced to 1,249 participants who responded to the survey.
Results

Characteristics of the study sample

Table 1: Sample characteristics: n (%)  

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample (N=1410)</th>
<th>Bridges Plus (n=512)</th>
<th>Bridges (n=402)</th>
<th>Control (n=496)</th>
<th>F-Value or χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants’ characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age (Mean, SD)</td>
<td>12.70(1.26)</td>
<td>12.71(1.24)</td>
<td>12.56(1.31)</td>
<td>12.75(1.23)</td>
<td>2.74</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.28</td>
</tr>
<tr>
<td>Female</td>
<td>789(55.96)</td>
<td>288(56.25)</td>
<td>228(56.72)</td>
<td>273(55.04)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>621(44.04)</td>
<td>224(43.75)</td>
<td>174(43.28)</td>
<td>223(44.96)</td>
<td></td>
</tr>
<tr>
<td>Orphan-hood Status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.57*</td>
</tr>
<tr>
<td>Double Orphan</td>
<td>297(21.06)</td>
<td>104(20.31)</td>
<td>70(17.41)</td>
<td>123(24.80)</td>
<td></td>
</tr>
<tr>
<td>Maternal Orphan</td>
<td>302(21.42)</td>
<td>113(22.07)</td>
<td>79(19.65)</td>
<td>110(22.18)</td>
<td></td>
</tr>
<tr>
<td>Paternal Orphan</td>
<td>811(57.52)</td>
<td>295(57.62)</td>
<td>253(62.94)</td>
<td>263(53.02)</td>
<td></td>
</tr>
<tr>
<td><strong>Household characteristics</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people in the household (Mean, SD)</td>
<td>6.35(2.79)</td>
<td>6.32(2.73)</td>
<td>6.26(2.62)</td>
<td>6.47(2.97)</td>
<td>0.67</td>
</tr>
<tr>
<td>Number of children in the household (Mean, SD)</td>
<td>3.18(2.20)</td>
<td>3.22(2.17)</td>
<td>3.11(2.09)</td>
<td>3.20(2.32)</td>
<td>0.34</td>
</tr>
<tr>
<td>Family Assets (Mean, SD)</td>
<td>9.73(3.22)</td>
<td>9.79(3.29)</td>
<td>9.52(3.26)</td>
<td>9.83(3.12)</td>
<td>1.16</td>
</tr>
<tr>
<td>Family Cohesion (Mean, SD)</td>
<td>23.50(5.13)</td>
<td>23.39(5.06)</td>
<td>23.27(5.02)</td>
<td>23.80(5.27)</td>
<td>1.40</td>
</tr>
<tr>
<td>Availability of Personal Savings</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.35</td>
</tr>
<tr>
<td>Yes</td>
<td>433(30.71)</td>
<td>172(33.59)</td>
<td>120(29.85)</td>
<td>141(28.43)</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>977(69.26)</td>
<td>340(66.41)</td>
<td>282(70.15)</td>
<td>355(71.57)</td>
<td></td>
</tr>
<tr>
<td>Caregiver Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6.59</td>
</tr>
<tr>
<td>Biological Parent</td>
<td>552(39.15)</td>
<td>216(42.19)</td>
<td>160(39.80)</td>
<td>176(35.48)</td>
<td></td>
</tr>
<tr>
<td>Grandparent(s)</td>
<td>516(36.60)</td>
<td>182(35.55)</td>
<td>137(34.08)</td>
<td>197(39.72)</td>
<td></td>
</tr>
<tr>
<td>Other relatives (i.e. aunt, uncle, siblings, in-laws)</td>
<td>342(24.26)</td>
<td>114(22.27)</td>
<td>105(26.12)</td>
<td>123(24.80)</td>
<td></td>
</tr>
</tbody>
</table>

*p≤.05; **p≤.01; ***p≤.001

Sample characteristics are summarized in Table 1 above. The average age of participants was 12.7 years. The majority of participants were female (56%). Across all three study arms, more participants (58%) identified as paternal orphans i.e. had lost a biological father only (χ²=10.27, p≤.05). Participants lived in households with an average of 6 members, with 3 children under the age of 18 years. About 39% of participants reported a surviving biological parent as their primary caregiver and 37% reported their grandparents. The average score of family cohesion was 23.5 (SD=5.13), indicating a moderate level of family closeness. In terms of household assets, the average asset ownership reported was 9.73 items out of the possible 20. These include, land, means of transportation, means of communication, microenterprise businesses and gardens. The majority of participants (69%) reported no personal savings. In the following section, results from regression analyses are reported.
Table 2: Regression models on PLE scores and school transition

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1: PLE Scores: b (95% CI)</th>
<th>Model 2: School Transition: OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intervention (Control)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridges</td>
<td>-3.78 (-4.92, -2.64) ***</td>
<td>1.69 (1.27, 2.25) ***</td>
</tr>
<tr>
<td>Bridges Plus</td>
<td>-2.23 (-3.32, -1.13) ***</td>
<td>1.66 (1.28, 2.18) ***</td>
</tr>
<tr>
<td>Participants’ characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.98 (0.59, 1.36) ***</td>
<td>0.64 (0.58, 0.71) ***</td>
</tr>
<tr>
<td>Gender: Female</td>
<td>1.25 (0.29, 2.22) **</td>
<td>1.04 (0.82, 1.32)</td>
</tr>
<tr>
<td>Orphan hood (Double orphan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maternal orphan</td>
<td>-0.46 (-1.93, 1.02)</td>
<td>1.41 (0.98, 2.04)</td>
</tr>
<tr>
<td>Paternal orphan</td>
<td>0.12 (-1.19, 1.43)</td>
<td>1.42 (1.02, 1.98) *</td>
</tr>
<tr>
<td>Household characteristics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of people in the household</td>
<td>0.004 (-0.33, 0.34)</td>
<td>1.09 (1.01, 1.19) *</td>
</tr>
<tr>
<td>Number of children in the household</td>
<td>-0.009 (-0.43, 0.42)</td>
<td>0.92 (0.78, 1.29)</td>
</tr>
<tr>
<td>Family Assets</td>
<td>0.28 (0.14, 0.43) ***</td>
<td>1.00 (0.96, 1.04)</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>0.03 (-0.06, 0.12)</td>
<td>1.00 (0.98, 1.03)</td>
</tr>
<tr>
<td>Availability of Personal Savings</td>
<td>0.48 (-0.54, 1.49)</td>
<td>1.01 (0.78, 1.29)</td>
</tr>
<tr>
<td>Caregiver (Others)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological parent</td>
<td>-0.89 (-2.15, 0.38)</td>
<td>1.09 (0.79, 1.52)</td>
</tr>
<tr>
<td>Grandparent</td>
<td>-0.23 (-1.43, 0.96)</td>
<td>0.86 (0.63, 1.16)</td>
</tr>
<tr>
<td>F or χ²</td>
<td>7.64 ***</td>
<td>131.23 ***</td>
</tr>
<tr>
<td>df</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.09</td>
<td>0.07</td>
</tr>
<tr>
<td>N</td>
<td>856</td>
<td>1375</td>
</tr>
</tbody>
</table>

*p≤0.05; **p≤0.01; ***p≤0.001

Table 2 above illustrates the effect of the Bridges intervention on participants’ PLE scores and school transition. Results indicate that participating in an economic empowerment intervention was associated with better PLE grades and transitioning to post-primary education. Specifically, controlling for participants’ demographic and household characteristics (model 1), participants in the Bridges arm (b=-3.78, 95% CI=-4.92, -2.64, p≤0.001) and Bridges Plus arm (b=-2.23, 95% CI=-3.32, -1.13, p≤0.001), were more likely to report better PLE scores compared to participants in the control condition. In addition, female participants were more likely to report better PLE grades compared to their male counterparts (b=1.25, 95% CI=0.29, 2.22, p≤0.01). However, participants’ age (b=0.98, 95% CI=0.59, 1.36, p≤0.001) and family assets (b=0.28, 95% CI=0.14, 0.43, p≤0.001) were inversely associated with PLE grades. Similarly, participants receiving the intervention exhibited higher odds of transitioning to post-primary education (model 2).

Specifically, the odds of transitioning to post-primary education were 1.69 times higher for Bridges arm participants (OR=1.69, 95% CI= 1.27, 2.25, p≤0.001) and 1.66 times higher for Bridges Plus arm participants (OR=1.66, 95% CI= 1.28, 2.18, p≤0.001), relative to the control condition. Participants who identified as paternal orphans (OR=1.42, 95% CI=1.02, 1.98, p≤0.05), and those reporting more individuals living in the household (OR=1.09, 95% CI=1.01, 1.19, p≤0.05) had higher odds of transitioning to post-primary education. However, older
adolescents had lower odds of transitioning to post-primary education compared to younger adolescents (OR=0.64, 95% CI=0.58, 0.71, p≤0.001).

**Discussion**

This paper examined the effect of participating in an economic empowerment intervention on the educational outcomes, i.e. academic performance and school transition from primary to post-primary education of orphaned adolescents in Uganda. Over the five-year assessment period, the *Bridges* intervention, which combines economic empowerment in the form of child matched savings, a mentorship program, and financial planning and microenterprise development workshops, indicate positive outcomes for orphaned adolescents. Results show that orphaned adolescents receiving the intervention, i.e. *Bridges* and *Bridges Plus* arms significantly performed better in the PLE and had higher odds of transitioning to secondary/high school or vocational institutions, as compared to their counterparts in the control arm. Given that adolescents receiving the intervention (and their families) did not have to worry about entirely paying for expensive post-primary education, it could be that they were more likely to think beyond primary school education and concentrate on their studies in order to qualify and enroll in post-primary education. Secondly, given that participants receiving the intervention met with peer mentors throughout the intervention period to discuss issues related to academic planning, setting realistic academic and career goals, financial planning and asset accumulation among others, it could be that adolescents were able to integrate the knowledge and skills acquired during their mentorship sessions into their schooling, leading to better performance.

Our findings support the premise of asset theory guiding the design and implementation of this work. In particular, promoting and increasing the economic assets and opportunities of vulnerable youth, such as orphaned adolescents, would encourage more positive beliefs and attitudes about the future (Schreiner & Sherraden 20017; Sherraden 1991; 1990). In this case, the multicomponent intervention provided a sense of economic security, hope and responsibility among adolescent orphans and enabled them to envision a more tangible and realistic future. These finds are also consistent with previous findings that documented positive impacts on academic participation in terms of attendance, academic planning and performance (Curley et al, 2014; Ssewamala & Curely, 2006; Ssewamala & Ismayilova 2009). It is important to point out that the most improvements were observed among participants in the *Bridges* arm, which received a savings match rate of 1:1. The implication of this finding is that regardless of the amount of the match incentive, all participants in the intervention were equally motivated to perform well and transition to post-primary education. It appears that small financial contributions can offset important outcomes for poor and vulnerable adolescents, especially those orphaned as a result of HIV/AIDS.

In addition, although study participants were recruited during their last 2-3 years of primary schooling, a large number of participants were either still in primary school 5 years later or had dropped out of school completely. This finding is consistent with those reported by Kasirye &
Hisali (2010), where orphans from poor families affected by HIV/AIDS were more likely to fall 3 years behind their appropriate grade level compared to non-orphans. This situation may be attributed to several factors beyond the intervention, such as family responsibilities, grade repetition/falling behind, and change of residences, which are common among orphaned adolescents, as well as stigma and discrimination associated with HIV/AIDS and orphanhood. Specifically, issues of family responsibilities where orphaned adolescents are forced to take on additional household responsibilities in lieu of schooling, is still a major challenge to educational participation and achievement in Uganda, and many parts of sub-Saharan Africa (Nabunyana & Ssewamala, 2014). Low levels of school attendance and participation inhibit children’s performance in school and ultimately lead to grade repetition and school drop-out. In addition, orphaned children are more likely to bounce from one extended family to another, especially when the current family is overwhelmed with a large number of orphaned children and poverty. In such cases, children are often forced to change schools and with that comes setbacks in schooling and performance. Further, although participants were enrolled in Universal Primary Education with no school fees required, schools continue to experience inadequate supplies and infrastructures, including instructional materials, classrooms, gender-specific bathrooms and teachers. Schools often shift the burden of paying for these infrastructures to parents and caregivers in the form of “building fees” and they became a basis for sending children back home for lack of payments, leading to missed schooling, poor performance and eventually dropping out of school. All these situations combined might help explain why a number of participants in our study had not transitioned from primary school.

Study limitations
Given that the intervention was provided as a multi-component intervention with a bundle of services that included matched savings, mentorship and financial planning and microenterprise development, it is not possible to tease out the unique contribution of each individual component on educational outcomes. Future research should consider testing the effectiveness of each of the intervention components on adolescent outcomes. Also, the lack of a true control condition may have implications for findings. Researchers should consider designs where non-intervention participants do not receive support services from the study in order to ascertain the net effect of the intervention. Finally, the sample was limited to rural school/participants. Findings could be different among schools and participants in an urban school setting.

Conclusion
Even with these limitations, our findings indicate that participating in an economic intervention has the potential to improve adolescents’ academic performance and reduce their economic barriers to transition from primary education to secondary school or vocational education. The overall implication of these findings is that the outcomes of national policies such as Universal Primary Education could be improved and strengthened by incorporating economic strengthening components to help address poverty issues for poor families, especially those
caring for orphaned children and adolescents, in order to offset their human capital outcomes, including educational achievement.

References


