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Assessing the impact of an asset-based intervention on educational outcomes of orphaned children and adolescents: findings from a randomised experiment in Uganda

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Abstract

This paper examines the effect of an asset-based intervention on academic performance and school transition among orphaned and vulnerable children in Uganda. Participants were randomly assigned to either the control arm or two treatment arms receiving an asset-based intervention. Participants in the treatment arms scored better grades; and had higher odds of transitioning to post-primary education relative to the control arm. Programmes which target financial insecurity may have a positive impact on the educational achievement and progression of orphaned children. There is a need to consider incorporating asset-based interventions within the development of educational policy, especially in low-income countries.

Keywords

Academic performance; school transition; Bridges to the future; orphaned children

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Introduction

Approximately 50 million children in sub-Saharan Africa (SSA) are orphans, i.e. have lost one or both biological parents; more than 15 million of these have lost their parent(s) to HIV/AIDS (UNICEF, 2016). In Uganda, one of the SSA countries hardest hit by the epidemic, more than 1.2 million children are orphaned as a direct result of the disease (UNICEF, 2016). 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 (Bicego, Rutstein, & Johnson, 2003; Case, Paxton, & Ableidinger, 2004). They are more likely to have poor educational outcomes, including lower school enrolment and attendance rates, less likely to be at a proper education level and are more likely to drop out of school completely (Case et al., 2004; Evan & Miguel, 2004; Kasirye & Hisali, 2010; Monasch & Boerma, 2004).

Given the aforementioned risks, educational opportunities are a key component of the current safety net programmes for orphaned and vulnerable children (OVCs) in communities heavily affected by HIV/AIDS (Hunter & Williamson, 2000). Indeed, OVCs are widely considered a subset of the population targeted by Education for All – a Dakar Framework for Action global commitment that obligates countries to ensure that all children (especially girls, children in difficult circumstances and ethnic minorities) have access to and complete, free and compulsory primary education of good quality (UNESCO, 2000).

Uganda is one of the countries that embraced the Education for All movement. In 1997, Universal Primary Education (UPE), was instituted as one of the United Nations Millennium Development Goals, wherein each child of school-going age is allowed to attend primary school without paying tuition. The abolition of school fees improved entry into primary schooling, incentivised school enrolment and reduced dropout, particularly for girls and for children in rural areas (Deininger, 2003; Grogan, 2009). Between 2000 and 2015, access to primary school increased by 27.7%, and net enrollment at primary school level increased from 83% to 96% (MoES, 2015). However, the completion rates (i.e. the percentage of students of official graduation age who complete primary school) remains lower than the 100% target (Uganda Ministry of Education and Sports [MoES], 2015). The 2016/2017 statistics from MoES indicate that the survival rate to primary seven (i.e. the percentage of a cohort of students enrolled in a given year who reach primary seven) was only 32%, and out of these only 62% were able to complete primary education (i.e. sit for their Primary Leaving Examinations [PLE]) (MoES, 2017).

Despite progress in school access and enrolment, Uganda still faces challenges in ensuring that OVCs participate in and complete primary schooling. The challenges include lack of infrastructure (e.g. classrooms and sanitation facilities given high enrolment rates), high dropout rates (especially among girls), teacher absenteeism and high attrition rates, and the HIV/AIDS epidemic that affect both the supply of qualified teachers and school participation of OVCs (MoES, 2015). These challenges, combined with poor schooling and educational outcomes associated with HIV orphanhood (Bicego, et al., 2003; Case et al., 2004), further limit the opportunities of OVCs from benefiting from the education policy of education for all.

Improving household economic security and providing psychosocial support to affected children and their caregivers is one strategy to address the needs of OVCs. There has been a growing interest in asset-building interventions to enable individuals with limited financial and economic resources or opportunities to acquire and accumulate long-term productive assets (Ssewamala, 2015). Asset-based interventions are modelled on *asset theory* (Sherraden, 1990, 1991), which posits that assets (e.g. savings, educational opportunities, economic opportunities, including microenterprise activities) have important social, economic and psychological benefits for individuals and families. In addition, Sherraden theorises that holding even minor financial or material assets affects individuals' behaviours, attitudes and hopes for the future. The acquisition of assets creates a sense of financial security, which in turn improves self-confidence, responsibility and hope for the future. This is what Schreiner and Sherraden (2007) refer to as *asset effects*.

Several studies both in the developed and developing world have demonstrated positive outcomes, ranging from improved health and psychosocial outcomes, financial outcomes and social outcomes, including educational outcomes (Adato & Bassett, 2009; Cheatham & Elliott, 2013; Curley, Ssewamala, & Han, 2010; Elliott, 2009; Han, Ssewamala, & Wang, 2013; Kim & Sherraden, 2011; Ssewamala, Han, Neilands, Ismayilova, & Sperber, 2010; Ssewamala & Ismayilova, 2009; Ssewamala, Neilands, Waldfogel, & Ismayilova, 2012). For example, previous studies among OVCs in Uganda found that participating in asset-based interventions, specifically those that use matched savings accounts, was associated with positive changes in adolescents' future educational planning, higher levels of confidence in the future, better school grades and school attendance (Curley et al., 2010; Ssewamala & Ismayilova, 2009). Therefore, asset-based interventions have the potential to increase household economic resources and reduce economic stressors associated with paying non-tuition requirements, thereby reducing student's absenteeism and improving their performance in school.

Although the aforementioned studies documented positive school outcomes and educational planning among OVCs in Uganda, they have all been tested using relatively small samples, with relatively short intervention and follow-up periods. In addition, none examined participants' transition rates and progression from primary school to post-primary education. Yet, post-primary education is equally important in defining children's career paths and preparing them for futures that contribute to a country's economic, political and social development. This paper, therefore, examines the impact of an asset-based intervention on academic performance and school transition among a relatively large sample of OVCs, using longitudinal data collected over 5 years, and comparing three study groups. In implementing UPE, this specific focus is important to researchers developing strategies to address the challenges associated with educational outcomes of OVCs in SSA countries heavily affected by HIV/AIDS.

Methods

Study sample and design

This paper uses data from the *Bridges to the Future* study (hereafter *Bridges* study), a 5-year (2011–2016) randomised controlled trial funded by the National Institute of Child Health and Human Development (NICHD Grant #1R01 HD070727–01, PI: Fred Ssewamala, PhD).

The *Bridges* study evaluated the impact of a family asset-based intervention that use Child Development Accounts (CDAs) on the developmental outcomes of OVCs in Southern Uganda. Forty-eight primary schools were randomly assigned to either the control arm ($n = 16$ schools, 496 participants) or one of the two treatment arms: *Bridges* arm ($n = 16$ schools, 402 participants) or *Bridges Plus* arm ($n = 16$ schools, 512 participants). Eligible participants had lost one or both biological parents to HIV/AIDS, lived within a family and not an institution, and were in grades 5 or 6 of a public primary school. Participants in the control condition received ‘usual care’ services offered to OVCs in the region, including food aid and scholastic materials. Participants in the two treatment arms (*Bridges* and *Bridges Plus*) received usual care services plus the following intervention components: A matched savings account in a form of a CDA with a matching rate of 1:1 for the *Bridges* arm or a 2:1 match ratio for the *Bridges Plus* arm; microenterprise workshops for participants and their caregivers; and a one-hour monthly mentorship programme for participants. Additional information on the Suubi and Bridges mentorship programme has been published elsewhere (Nabunya, Ssewamala, Mukasa, Byansi, & Nattabi, 2015; Ssewamala, Nabunya, Mukasa, Ilic, & Nattabi, 2014).

Measures

Data for the Bridges study were collected at baseline, 12, 24, 36, and 48 months post baseline. Each study participant responded to a 90-min survey administered by trained Ugandan interviewers. The primary outcomes for this analysis were OVCs’ academic performance and school transition, collected between 24- and 48-months follow-ups.

Academic performance was measured using official scores from PLE, a national standardised examination administered by the MoES to all students completing primary school in Uganda. All students intending to enroll in post-primary education including vocational institutions must complete and pass the PLE. Participants in the *Bridges* study were recruited within their last 3 years of primary schooling; therefore, their PLE scores were collected between 24 and 48 months follow-ups. PLE scores are measured in aggregates, ranging from 4 (best) to 36 (worst). To illustrate, a total aggregate of 4 means that a child received Distinction 1 (also presented as D1, the best grade one could get in any given subject) for each of the four subjects on which each student is tested (i.e. English Mathematics, Social Studies, Science). Likewise, if a child gets a total aggregate of 36, it means that he/ she got Failure 9 (also presented as F9, the worst grade one could get) for each of the four subjects outlined above.

School transition was measured by participants’ enrollment into post-primary education, (i.e. secondary/high school or vocational institutions). This data was collected between 24- and

48-months follow-up. Responses were coded as '1' for those who had transitioned to post-primary education and '0' for those who had not transitioned.

The independent variable was participation in the *Bridges* intervention. Participants' demographic and household characteristics included as control variables were age, gender, orphanhood status (single or double orphan), the child's primary caregiver, household size, family cohesion, availability of personal savings and household assets. A household asset index was created, measuring the amount of assets (ranging from 0 to 20 items) reported by participants in the form of home ownership, land or rental property, means of transportation, gardens and livestock, and any ownership of a family microenterprise business.

Data analysis

Baseline sample characteristics were analysed and compared between the three study arms (i.e. the control arm, *Bridges* arm, *Bridges Plus* arm). Specifically, chi-square tests of independence and analysis of variance (ANOVA) were conducted. A descriptive analysis of school outcomes (i.e. PLE performance and school transition to post-primary education) was conducted. In addition, ordinary least squares 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.

Results

Characteristics of the study sample

Baseline sample characteristics are summarised in Table 1. The average age of participants was 12.7 years. The majority of participants were female (56%). Across all three study arms, participants reported statistically different distribution on orphanhood status, with a higher likelihood of being paternal orphans (i.e. had lost a biological father) ($\chi^2 = 10.27, p = .05$). Participants lived in households with an average of six members, with three 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, indicating moderate levels of household asset ownership. The majority of participants (69%) reported no personal savings.

PLE performance and school transition

Descriptive analysis results of school outcomes are provided in Table 2. Of the total sample, about 61% completed their PLE, meaning that they completed their primary education. Participants in both treatment arms completed PLE at similar rates, higher than those in the control arm. The average PLE aggregate score was 24.57, with participants in the *Bridges* arm (mean score = 22.6) performing better compared to their counterparts in the *Bridges Plus* arm (mean score = 24.33) and the control arm (mean score = 26.74). In terms of school transition, about 46% of the total sample (representing about 67% of those who completed

PLE) transitioned to post-primary school. About half of participants in both *Bridges* and *Bridges Plus* arms transitioned to post-primary education, compared to only 36% of participants in the control arm. Overall, participants who completed PLE had a high likelihood of transitioning to post-primary education.

Finally, at 48-months follow-up, 59% ($n = 839$) of participants had not transitioned to post-primary education. They had either dropped out of school before or after completing primary school (44.9%), had not completed primary school at the time of interviews (2.9%), or lost to follow up (11.7%). Results from regression analyses are presented in the next section.

Effect of the bridges intervention on academic performance and school transition

Table 3 illustrates the effect of the *Bridges* intervention on participants' PLE scores and school transition. Results indicate that participating in an asset-based intervention (*Bridges* or *Bridges Plus*) was associated with better PLE grades (lower scores indicate better performance) 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% confidence interval [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. Between the intervention groups, participants in the *Bridges* arm, receiving the 1:1 match rate, scored 1.55-point higher than those in the *Bridges Plus* arm receiving 1:2 match rate. Participants' gender ($b = 1.25$, 95% CI = $0.29, 2.22$, $p = 0.01$), 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 (odds ratio [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. In addition, 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 examines the effects of participating in an asset-based intervention on educational outcomes (i.e. academic performance and school transition from primary to post-primary education) of OVCs in Uganda. Over the 5-year assessment period, the *Bridges* intervention, which combines CDAs, a mentorship programme and financial planning and microenterprise development workshops, indicate positive outcomes for OVCs. Results show that OVCs receiving the intervention (i.e. *Bridges* and *Bridges Plus* arms) performed significantly better on the PLE and had higher odds of transitioning to secondary/high school or vocational institutions than their counterparts in the control arm. Because OVCs

receiving the intervention (and their families) did not have to worry about paying the entirety of an expensive post-primary education, it could be that they were more likely to think beyond primary school education and concentrate on their studies to qualify and enrol in post-primary education. Moreover, given that participants receiving the intervention met with peer mentors throughout the intervention period to discuss academic planning, setting realistic academic and career goals, financial planning and asset accumulation, it is possible that adolescents were able to integrate the knowledge and skills acquired during their mentorship sessions into their schooling, leading to better performance.

The findings of this study support the premise of asset theory that guides the design and implementation of this work. In particular, promoting and increasing the economic assets and opportunities of vulnerable youth, such as OVCs, encourages more positive beliefs and attitudes about the future (Schreiner & Sherraden, 2007; Sherraden, 1991, 1990). In this case, the multicomponent intervention provided a sense of economic security through the provision of matched savings, provided OVCs with a sense of hope to complete primary school without economic constraints, enabling them to envision a more tangible and realistic future, as well as personal responsibility of paying attention in class and working harder to achieve better grades. These findings are also consistent with previous findings that documented positive impacts on academic participation in terms of attendance, academic planning and performance in Uganda (Curley, Ssewamala, Nabunya, Ilic, & Keun, 2014; Ssewamala & Curley, 2006; Ssewamala & Ismayilova, 2009).

In addition, though study participants were recruited during their last 2–3 years of primary schooling, a large number of participants had either dropped out of school completely or were still in primary school 5 years later. Among those who had dropped out, more than half (53.8%) were participants in the control condition. This finding is consistent with those reported by Kasirye and Hisali (2010), wherein 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 OVCs, as well as stigma and discrimination associated with HIV/AIDS and orphanhood. Specifically, issues of family responsibilities that force OVCs to take on additional household responsibilities in lieu of schooling remains a major challenge to educational participation and achievement in Uganda, and many parts of SSA (Nabunya & Ssewamala, 2014). Low levels of school attendance and participation inhibit children's performance in school and ultimately lead to grade repetition and school dropout. In addition, OVCs 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, which results in setbacks in schooling and performance.

Furthermore, though participants were enrolled in UPE 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.' This often becomes the basis for sending children back home for lack of payments,

leading to missed schooling, poor performance and eventually dropping out. 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 bundle of services that included matched savings, mentorship, financial planning and microenterprise development, it is not possible to measure the unique contribution of each individual component on educational outcomes. Future research should consider testing the effectiveness of each of the intervention components on OVC outcomes. Also, the lack of a true control condition may have implications for findings. Researchers should consider designs, wherein non-intervention participants do not receive support services from the study to ascertain the net effect of the intervention. The sample was limited to rural school/participants. Findings could be different among schools and participants in an urban school setting.

Implications and conclusion

Even with these limitations, the findings indicate that participating in an economic intervention has the potential to improve OVCs' academic performance and reduce their economic barriers to transition from primary education to secondary school or vocational education. The small differences observed between the two intervention groups have implications for programming and policy. Specifically, programmes intending to incorporate matched saving interventions within the social protection efforts for OVCs may not need to select a higher match rate to see positive results. Even small financial contributions can offset the possible negative outcomes for OVCs, especially those orphaned as a result of HIV/AIDS. Finally, outcomes of national policies such as UPE could be improved and strengthened by incorporating economic strengthening components to help address poverty issues for poor families, especially those caring for OVCs to offset their human capital outcomes, including educational achievement.

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Table 1.Baseline sample characteristics: *n* (%).

Variable	Total sample (<i>N</i> = 1410)	Bridges Plus arm (<i>n</i> = 512)	Bridges arm (<i>n</i> = 402)	Control arm (<i>n</i> = 496)	<i>F</i> -value or χ^2
<i>Participants' characteristics</i>					
Age (mean, SD)	12.70 (1.26)	12.71 (1.24)	12.56 (1.31)	12.75 (1.23)	2.74
Gender					0.28
Female	789 (55.96)	288 (56.25)	228 (56.72)	273 (55.04)	
Male	621 (44.04)	224 (43.75)	174 (43.28)	223 (44.96)	
Orphan-hood status					10.57*
Double orphan	297 (21.06)	104 (20.31)	70 (17.41)	123 (24.80)	
Maternal orphan	302 (21.42)	113 (22.07)	79 (19.65)	110 (22.18)	
Paternal orphan	811 (57.52)	295 (57.62)	253 (62.94)	263 (53.02)	
<i>Household characteristics</i>					
Number of people in the household (mean, SD)	6.35 (2.79)	6.32 (2.73)	6.26 (2.62)	6.47 (2.97)	0.67
Number of children in the household (mean, SD)	3.18 (2.20)	3.22 (2.17)	3.11 (2.09)	3.20 (2.32)	0.34
Family assets (mean, SD)	9.73 (3.22)	9.79 (3.29)	9.52 (3.26)	9.83 (3.12)	1.16
Family cohesion (mean, SD)	23.50 (5.13)	23.39 (5.06)	23.27 (5.02)	23.80 (5.27)	1.40
Availability of personal savings					3.35
Yes	433 (30.71)	172 (33.59)	120 (29.85)	141 (28.43)	
No	977 (69.26)	340 (66.41)	282 (70.15)	355 (71.57)	
Caregiver type					6.59
Biological parent	552 (39.15)	216 (42.19)	160 (39.80)	176 (35.48)	
Grandparent(s)	516 (36.60)	182 (35.55)	137 (34.08)	197 (39.72)	
Other relatives (i.e. <i>aunt, uncle, siblings, in-laws</i>)	342 (24.26)	114 (22.27)	105 (26.12)	123 (24.80)	

Table 2.Descriptive analysis of PLE performance and school transition: *n* (%).

Variables	Total (<i>N</i> = 1410)	Bridges Plus arm (<i>n</i> = 512)	Bridges arm (<i>n</i> = 402)	Control arm (<i>n</i> = 496)
Completed PLE				
Yes	856 (60.71)	319 (62.30)	264 (65.67)	273 (55.04)
No	554 (39.29)	193 (37.70)	138 (34.33)	223 (44.96)
PLE scores (mean, SD)	24.57 (6.98)	24.33 (6.24)	22.62 (7.78)	26.74 (6.39)
Transitioned to post-primary				
% of the sample	571 (45.86)	224 (50.56)	187 (51.80)	160 (36.28)
% of those who completed PLE	571 (66.7)	224 (70.2)	187 (70.8)	160 (71.7)
Dropped out of school	633 (44.9)	204 (39.8)	162 (40.3)	267 (53.8)
Repeated a grade/still in primary school	41 (2.9)	15 (2.9)	12 (3.0)	14 (2.8)
Lost to follow-up	165 (11.7)	18 (3.5)	12 (3.0)	55 (11.1)

Table 3.

Regression models on PLE scores and school transition.

Variables	Model 1: PLE scores: b (95% CI)	Model 2: School transition: OR (95% CI)
Intervention (control)		
Bridges	-3.78 (-4.92, -2.64)***	1.69 (1.27, 2.25)***
Bridges Plus	-2.23 (-3.32, -1.13)***	1.66 (1.28, 2.18)***
Participants' characteristics		
Age	0.98 (0.59, 1.36)***	0.64 (0.58, 0.71)***
Gender (female)	1.25 (0.29, 2.22)**	1.04 (0.82, 1.32)
Orphan hood (double orphan)		
Maternal orphan	-0.46 (-1.93, 1.02)	1.41 (0.98, 2.04)
Paternal orphan	0.12 (-1.19, 1.43)	1.42 (1.02, 1.98)*
Household characteristics		
Number of people in the household	0.004 (-0.33, 0.34)	1.09 (1.01, 1.19)*
Number of children in the household	-0.009 (-0.43, 0.42)	0.92 (0.78, 1.29)
Family assets	0.28 (0.14, 0.43)***	1.00 (0.96, 1.04)
Family cohesion	0.03 (-0.06, 0.12)	1.00 (0.98, 1.03)
Availability of personal savings	0.48 (-0.54, 1.49)	1.01 (0.78, 1.29)
Caregiver (others)		
Biological parent	-0.89 (-2.15, 0.38)	1.09 (0.79, 1.52)
Grandparent	-0.23 (-1.43, 0.96)	0.86 (0.63, 1.16)
<i>F</i> or χ^2	7.64***	131.23***
df	13	13
Adjusted <i>R</i> ²	0.09	0.07
<i>N</i>	856	1375

* *p* .05** *p* .01*** *p* .001.