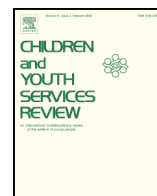




Contents lists available at ScienceDirect

Children and Youth Services Review

journal homepage: www.elsevier.com/locate/childyouth

Can economic assets increase girls' risk of sexual harassment? Evaluation results from a social, health and economic asset-building intervention for vulnerable adolescent girls in Uganda

Karen Austrian*, Eunice Muthengi

Population Council, Kenya

ARTICLE INFO

Article history:

Received 29 January 2014

Received in revised form 1 August 2014

Accepted 16 August 2014

Available online xxxxx

Keywords:

Adolescents

Savings

Assets

Reproductive health

Sexual harassment

Uganda

ABSTRACT

For adolescent girls in Sub-Saharan Africa, social isolation and economic vulnerability are critical problems that prevent a healthy transition from girlhood into womanhood. This study examines the effect of a multi-dimensional intervention on social, health and economic assets, as well as experiences of sexual harassment, among vulnerable adolescent girls aged 10–19 living in the low income areas of Kampala, Uganda. The study compares two treatment groups to a comparison group. The first treatment group received the full intervention – safe spaces group meetings with reproductive health and financial education plus savings accounts – while the second group only received a savings account. Findings indicate that the full intervention was associated with improvement in girls' health and economic assets. While girls who only had a savings account increased their economic assets, they were also more likely to have been sexually touched (OR = 3.146; $P < 0.01$) and harassed by men (OR = 1.962; $P < 0.05$). This suggests that economic asset building on its own, without the protection afforded by strengthening social assets, including social networks, as well as reproductive health knowledge, can leave vulnerable girls at increased risk of the sexual violence.

© 2014 Elsevier Ltd. All rights reserved.

1. Introduction

This study examines the effect of a multi-dimensional intervention on social, health and economic assets, as well as experiences of sexual harassment, among vulnerable adolescent girls aged 10–19 living in the low income areas of Kampala, Uganda. For adolescent girls in Sub-Saharan Africa, social isolation and economic vulnerability are critical problems that prevent a healthy transition from girlhood into womanhood. The issues that girls are confronted with – high rates of gender based violence, unsafe sex that puts girls at risk for unwanted pregnancy and HIV infection, school dropout, lack of economic resources and income generating options, lack of agency and participation – are linked with one another through their root causes. Therefore, the solutions must be interconnected as well, helping girls to build their social, health and economic assets.

2. Background and theory

The asset building framework for vulnerable adolescent girls is the theoretical underpinning guiding this intervention (Austrian & Ghati,

2010; Bruce and Sebstad, 2004). Assets are a store of value that girls can use to both reduce vulnerabilities and expand opportunities. For example, self-efficacy is an asset. A girl can draw on her self-efficacy to negotiate for safer sex (reduce vulnerabilities) or to excel at a job interview (expand opportunities). Another example of an asset is savings. A girl can use her savings in case of an illness in the family to pay for the hospital bill instead of getting money in a risky way (reducing vulnerabilities). Savings can also be used to pay for a vocational training course (expand opportunities).

The literature speaks to the importance of social, health and economic assets individually as means to improve sexual health outcomes. There is a growing literature on social capital (Putnam, 2004) and the association of increased social capital with decreases in risky behavior and more successful health programs. Social capital has been defined both as networks, i.e. participation in community groups, and group norms, i.e. high levels of trust and reciprocity among community members (Putnam, 1993). One study identified social capital as a variable that mitigates the negative effect of increasing income inequality on poorer health outcomes (Kawachi, Kennedy, Lochner & Prothrow-Stith, 1997). Lack of social capital can prevent adolescents from taking control of decisions regarding their sexual behavior (Campbell & MacPhail, 2002), while the presence of a social network, one component of social capital, may lead to risk reduction and changes in the community norms about risk-taking behavior (Latkin & Knowlton, 2005). One HIV prevention intervention that addressed community factors, in

* Corresponding author at: General Accident Insurance Hse, 2nd Floor, Ralphe Bunche Road, P.O. Box. 17643-00500, Nairobi, Kenya. Tel.: +254 202713480.

E-mail addresses: kaustrian@popcouncil.org (K. Austrian), emuthengi@popcouncil.org (E. Muthengi).

addition to individual and group factors was associated with lower HIV rates (Jana, Basu, Rotheram-Borus & Newman, 2004). Another study of an intervention with adolescent girls in Zimbabwe showed that participation in local community groups was associated with lower rates of HIV, which was in turn associated with improved psychosocial attributes of knowledge, perceived vulnerability, and self-efficacy (Gregson, Terceira, Mushati, Nyamukapa & Campbell, 2004). Another study that combined micro-finance with a community based intervention health intervention showed a positive impact on economic, sexual health and gender based violence outcomes (Kim et al., 2009). Finally, stepping stones, a program that combines community development with participatory training on HIV and gender equitable relationships, has been shown to also have a positive effect on health outcomes (Jewkes et al., 2008).

Social isolation, as a vulnerability factor, is a window of opportunity for intervention through making programs available to adolescent girls. However, overall this has been a missed opportunity. Adolescent girls are overlooked by places which could potentially help them because their unique status is not recognized. They are unrecognized by terms and structures such as youth, households, and health systems (Mabala, 2006). A study from South Africa showed that girls who were more socially isolated were more likely to have experienced sexual coercion and transactional sex (Hallman, 2005). Similarly, girls that belong to an organization and girls that have a role model were found to have fewer sexual partners (Hallman, 2011). In a study from a social and health asset building program for girls in rural Ethiopia, 10–14 year old girls were 3 times more likely to be in school and less likely to be married and girls who were sexually experienced were more likely to be using contraceptives (Erulkar & Muthengi, 2009).

In addition, there are some examples in the literature of programs that help to increase economic assets, which in turn result in more positive reproductive health outcomes for the participants. The Hallman (2005) study in South Africa showed that girls with financial goals had more realistic assessments of their HIV risk, had more knowledge about HIV transmission, and were more likely to have been tested for HIV, while girls with savings were likelier to know about family planning. In addition, girls who were more economically vulnerable were more likely to have experienced sexual coercion and engaged in transactional sex (Hallman, 2005). In Uganda, a savings-based economic intervention for AIDS-orphaned adolescents was associated with improved HIV-prevention attitudes (Ssewamala, Alicea, Bannon, & Ismayilova, 2008). A study on cash transfers to adolescent girls in Malawi showed that girls who received the cash transfer had a decline in early marriage, teenage pregnancy and self-reported sexual activity (Baird, Chirwa, Mcintosh & Ozler, 2010). A study with adolescent girls in Bangladesh showed that adding a financial education component to life-skills resulted in significantly greater positive impact in changing sexual behaviors (Amin et al., 2010).

The theory of change behind this intervention posits that girls need a combination of social, health, and economic assets in order to make a healthy transition into adulthood, which in turn will reduce poverty. One kind of asset (i.e. knowledge of HIV and pregnancy) is not sufficient because often girls' economic situation trumps their knowledge of risky behavior. Similarly, only having a savings account or a vocational skill is also not enough to take control of their health or to have the self-efficacy and networks through which to capitalize on economic opportunities. In addition, it is possible that economic assets alone might pose a risk for vulnerable girls.

Due to the linkages between the root causes of gender based violence, negative sexual and reproductive health outcomes, and a lack of economic resources – in addition to the role that strong social assets and voice can play across all three areas – investments must be made to build the full range of assets in order to see results in either the health or livelihood arena. The lack of economic resources and agency increases dependency within sexual relationships and makes negotiation for safer sex out of reach. Therefore, successful program strategies must

address these linkages, and underlying causes, and build a range of girls' assets by providing safe spaces where girls can build their social networks and gain basic financial and health education, and be linked to formal savings accounts and clinical health services.

3. Intervention model

The intervention model contains four main components: safe spaces, reproductive health training, financial education and savings accounts.

3.1. Safe spaces

The core of the safe spaces component is a weekly girl group meeting in which a group of 15 to 25 girls meet with a mentor – a young woman from their community – for short training sessions (30–90 min – depending on girls' availability) on a variety of topics, as well as a chance to discuss the events of the past week. These regular, stable group sessions serve two critical functions: 1) to build a platform in which girls are organized and can be reached with a variety of interventions and education topics (e.g. a health clinic; a financial institution); and 2) to build social assets – including friends, trusting relationships, and self-efficacy that have positive influence on other livelihood and health dimensions of their lives. In addition, because groups meet on the weekend, after school, or during school breaks (if school-based), there is no competition with formal education.

Mentors are young women ages 20–35 residing in the same community as the girls in the groups. Mentors are recruited by program staff for their experience in working with youth and training skills, as well as interest in working with vulnerable adolescent girls. Prior to starting the mentors go through an intensive five-day 'training of trainers' in which they are trained on the content of what they will teach the girls, as well as training skills. In addition, mentors meet once a month with program staff to review successes and address any challenges that may be arising. Every 3–4 months the program organizes a two to three day 'refresher training' on a topic that the mentors need further information on.

Mentors meet the girls in their group once a week at a designated time and location. If a girl misses more than two or three sessions in a row, the mentor is expected to make a home visit to follow up and determine the reason for her absence.

3.2. Reproductive health training

The health education that is delivered to the girls is based on *Tuko Pamoja: Adolescent Reproductive Health and Life Skills Curriculum* (PATH & Population Council, 2005). This curriculum includes 30 sessions on a range of topics including: information on puberty, reproduction, family planning, HIV/AIDS and other STIs, drug abuse, communication, sexual feelings, self-efficacy, gender based violence, and peer pressure.

3.3. Financial education (FE)

While not the only education topic in the group meetings, FE sessions are critical for building a base of knowledge and skills on personal money management – including prioritizing spending based on needs and wants, setting financial goals, budgeting and saving – as well as exploring options for earning money in formal and informal economies. Mentors use a simplified set of financial education sessions, entitled "Young Women: Your Future, Your Money" that was adapted for girls in Uganda from Microfinance Opportunities "Young People: Your Future Your Money" universal youth financial education curriculum.

3.4. Savings accounts

The Council worked with four financial institutions to develop a formal savings account based on extensive market research. As part of the

account opening process, girls join a savings group and open an individual savings account. The accounts are no/low minimum balance to open (depending on the FI) and any amount can be deposited or withdrawn with no fee. The financial institution organizes periodic fun days to reward girls who demonstrate regular savings and mobilize new girls to open accounts, as well as quarterly parents' meetings to inform the parents, provide them with basic financial education and cross-sell the financial institution's additional products.

4. Intervention implementation¹

The intervention began in Uganda in October 2009 and was offered by two local banks – FINCA-Uganda and Finance Trust. These financial institutions were chosen because they 1) had an interest in the development of a girls' savings account, 2) had commitment from the top management levels for this type of project, and 3) had the right systems in place to deliver it.

After a 3–4 month pilot preparation process in which the product design was finalized, the products were branded, staff was hired and trained, and the systems were set up at the financial institutions, the pilot test was launched with a target of 500 girls for each financial institution. Each financial institution piloted the account in two branches: for FINCA the pilot test branches were in Katwe and Kawempe and for Finance Trust the pilot test branches were in Katwe and Kalerwe (all slum areas in Kampala). The pilot period lasted approximately one year during which the savings and group activity was monitored and adjustments to the model made along the way.

Over the course of the one-year pilot period, over 1000 girls participated in the two financial institutions. These are the girls who participated in the evaluation. While all girls were meant to receive all four components of the program, there was an issue in Uganda in the program delivery during the first few months of the pilot in which about a third of the girls were never told that they could join a group due to mis-trained savings mobilizers. Initially, savings mobilizers in all program sites did not know that they should invite the girls to join a group after opening a savings account. Once they were informed, they began inviting girls to join groups. Since this affected all mobilizers, we do not believe that there was systematic bias as would be the case if only certain mobilizers had been mis-trained. Therefore, about a third of girls in the pilot test evaluation only had a savings account, while two thirds had both a savings account, as well as group participation/training. Although not randomly assigned to the different program versions, because the girls who did not join a group a) did not know they had the option to join a group and b) did not have a discriminating characteristic as to why they were kept out of the groups, it is reasonably fair to compare between the two groups. In addition, there was no significant difference at baseline between girls with and without a group in the following measures: age, religion, schooling status, living arrangements, personal asset owning, and household asset owning (see Table 1).

This study utilizes the program delivery error to examine the impact of receiving a savings account only (Savings Only), versus receiving the full intervention with group participation and training (Savings PLUS). Based on the asset building framework, the study tests the following hypotheses: (1) girls who participated in the full intervention will have increased social, health and financial assets, (2) girls who received savings accounts only will have increased financial assets, but not social and health assets, (and 3) social and health assets are protective against sexual harassment.

¹ The authors are both affiliated with Population Council – Kenya. Although designed by the first author, the interventions were managed and implemented by the two financial institutions. A separate Population Council staff, based in Uganda, provided technical assistance to the financial institutions on the implementation of the intervention.

Table 1
Demographic characteristics at baseline by study group.

	Baseline		
	Savings PLUS (N = 451)	Savings Only (N = 300)	Comparison (N = 313)
Age:			
10–14	59%	52%	72%***
15–19	42%	48%	28%
20–23	0%	6%	0.3%
Religion:			
Catholic	23%	25%	40%***
Protestant	38%	33%	35%
Muslim	38%	41%	25%
Other	1%	1%	0.3%
Ever married	1%	1%	0.6%
Educational status:			
Not in school	10%	9%	5%***
Primary school	49%	41%	65%
Secondary school	41%	49%	30%
College	2%	3%	2%
Living arrangements:			
Both parents	43%	46%	42%**
Mother only	32%	35%	26%
Father only	4%	3%	8%
Neither parent	21%	16%	23%
Socio economic status			
Household has:			
Electricity	67%	72%	54%***
Radio	78%	78%	65%***
Television	63%	65%	50%***
Telephone/mobile	97%	95%	90%***
Girl owns mobile	13%	15%	4%***
Identification:			
Girls with photo ID	54%	59%	42%***
Girls with photo ID (age 18+)	75%	75%	65%
Literacy:			
Read easily	57%	65%	53%*
Read with difficulty	38%	31%	39%
Cannot read at all	5%	4%	7%

*** p < 0.001 ** p < 0.01 * p < 0.05.

5. Materials and methods

5.1. Data

This study is based on two rounds of data collected in Uganda before and after the pilot period, which ran from October 2009 to September 2010. The baseline survey was conducted on a rolling basis, from October 2009 to May 2010, while the endline survey was conducted from November 2010 through March 2011. Therefore, at endline, girls were interviewed one year after they were enrolled in the intervention. The questionnaire was developed in English and translated into Luganda. It covered a range of topics, including demographic information, education status, living arrangements/asset holding, work and savings activities, financial literacy, social networks and vulnerability, gender norms, relationships and communication with parents, future goals, HIV/RH knowledge, and customer satisfaction/account usage.

A team of 16 women was hired (2 field supervisors and 14 interviewers) and trained for two days on interviewing skills and the survey instrument itself. The survey was pilot-tested and revised based on feedback from the interviewers. In the field, completed surveys were reviewed for accuracy by the field interviewers. Completed surveys were transported to Nairobi office periodically where data was entered on an ongoing basis.

Every girl who opened a savings account with Finance Trust or FINCA in the Katwe, Kalerwe and Kawempe (slums in Kampala) was interviewed at baseline. Girls were recruited by savings mobilizers hired by the financial institutions through community advertising at existing programs, reaching out to current adult clients, and through door to door recruitment. Once girls agreed to enroll, groups were

being formed by the financial institution field officers. After a group was formed, the field officers informed the Council study coordinator of the time and location of the introductory meetings and the appropriate numbers of interviewers were assigned. Data was collected in a rolling fashion as the girls opened their savings accounts, typically at the second or third group meeting. Although the baseline interview occurred just after the introduction to the program, the survey instrument was carefully worded so that girls were asked to describe their savings behavior and access to financial services prior to their engagement with the current program. The baseline data collection period corresponded to the period of time it took the financial institutions to reach their mobilization targets. Overall, a total of 1564 girls were interviewed at baseline, 543 from FINCA, 518 from Finance Trust and 503 from the comparison group. Comparison girls were recruited from the Nakawa slums in Kampala, the one most similar to slum areas where the product was being offered by Finance Trust and FINCA in the three most common methods through which the girls in Katwe, Kalerwe and Kawempe were recruited: daughters of existing clients, through community youth organizations and churches, and word of mouth from girl to girl. Since the intervention girls self-selected into the program while comparison girls were recruited for the survey, they are likely to be systematically different. Program girls might be more motivated and interested in issues related to savings and health. This is a limitation of the quasi-experimental design, in which girls were not randomly assigned to groups. However, the analysis method controls directly for differences in measured socio-demographic characteristics, and the effect of unmeasured time-invariant differences between girls that are correlated with the outcome.

Using the contact information obtained at baseline, as well as the help of the financial institution field officers and mentors, girls interviewed at baseline were identified and interviewed a second time at endline. A total of 1159 girls were interviewed at endline (392 FINCA, 437 Finance Trust, and 330 comparison). After eliminating cases that were not successfully matched between baseline and endline, the total sample for this study was 1064 matched cases – 368 FINCA, 383 Finance Trust, and 313 comparison (attrition rate of 32%). In the analysis, listwise deletion was used to handle missing data, which eliminated two cases in the comparison group.

5.2. Measures

The main dependent variable for the analysis is the study group, which compares: (1) girls who received the full intervention (Savings PLUS), including savings accounts, financial education, social networks and reproductive health information and (2) girls who opened savings accounts but did not participate in group activities (Savings Only) with (3) girls in the control group (comparison). The sample was distributed as follows: 451 Savings PLUS girls, 300 Savings Only girls, and 311 comparison girls. Group girls received the full intervention model.

Sexual harassment was defined using two dichotomous variables indicating girls who agreed with the statements: (1) In the past six months I have been touched indecently by someone of the opposite sex in my neighborhood, and (2) In my neighborhood, people of the opposite sex tease me as I go about my day.

Measures of financial assets included indicators of financial education and savings behaviors. Respondents were asked to respond “yes” or “no” to the following questions: (1) “Do you have a plan for how you are going to save your money?” (2) “Do you have a plan or budget for how you spend your money?” They were also asked an open ended question about saving: “What are two reasons that saving money is important?” Interviewers then coded the answers as “none correct,” “one correct and one incorrect” or “two correct.” Correct answers included personal use (clothes, entertainment, pads, etc.), emergencies and future opportunities (education/training, business, assets, etc.). Regarding savings behaviors, respondents were asked: “In the past six months did you save any money?” Responses were either “yes” or “no.” In addition,

they were asked: “In those past six months, in which of the following places have you saved your money?” They responded “yes” or “no” for each of the following methods: home bank, under a mattress/hole in the ground, suitcase, with a friend, with parents/guardians, merry-go-round, bank account, shopkeeper, savings group or others. A dichotomous variable was created indicating those who saved using informal methods only (among those who saved any money). Informal methods were defined as all methods other than a bank account or a savings group.

Three indicators were used for social assets. Girls were asked to “agree” or “disagree” with the following statements: (1) “There is a place other than my house, my friend’s house, or school, where I can meet my friends of the same sex.” (2) “If I needed money urgently, there is someone in my neighborhood who I can borrow money from” (3) “There is a female adult that is not my mother or teacher, who I meet regularly in my life that I can discuss my problems, joys and ask questions of.”

Reproductive health indicators included HIV knowledge, HIV testing and knowledge of contraceptive methods. Respondents were asked to mention all the ways in which a person can be infected with HIV. A dichotomous variable was created to identify respondents who mentioned sexual transmission of HIV. Girls were also asked to mention ways in which people can protect themselves from getting infected with HIV. A dichotomous variable was created to identify respondents who mentioned at least one correct HIV prevention method. In the original question, respondents were asked: “How can people protect themselves from getting infected with HIV?” Each response they gave was recorded. Correct responses included abstaining from sex, always using a condom, using sterilized needles, and requiring partners to take an HIV test. HIV-testing was measured using two questions with “yes” or “no” responses: (1) “Do you know where to get a test for HIV?” (2) “Have you had an HIV test?” Respondents were also asked to listen to a list of contraceptive methods and indicate which of the methods to avoid pregnancy they had heard about. Methods included: contraceptive pills, IUD, injectables/depo, foam tablets/jelly/cream, condom, female condom, Norplant, emergency contraception/morning after pill, periodic/postpartum abstinence, safe days, withdrawal, breastfeeding or other. A dichotomous variable was created to identify girls who knew at least one method.

5.3. Analysis

The bivariate analysis compared proportions across the three categories (Savings PLUS, Savings Only and comparison) at baseline and at endline. Differences were tested using the Pearson’s Chi-Square. For the first part of the multivariate analysis, separate random-intercept logistic regression models were conducted for each indicator, adjusting for the respondent’s age (10–14 versus 15–23), religion (Catholic, Christian, Muslim, others) school status (in-school or out-of-school), education (years of schooling) and socio-economic status (whether household has electricity). These variables were included because of significant differences detected between intervention and comparison groups at baseline on each variable. All models include an interaction terms between the treatment groups (Savings PLUS versus comparison and Savings Only versus comparison) and the time period (baseline versus endline). Estimates for the interaction terms obtained from these models represent the difference in the outcomes between exposed (e.g. Savings PLUS) and non-exposed (comparison) over time (i.e. from baseline to endline). This technique also controls for unobserved characteristics of individuals that might be correlated with the outcome. Therefore, if the dummy variable for Savings PLUS at endline is statistically significant, we can interpret the results as showing that the difference in the outcome values between baseline and endline differed significantly between Savings PLUS and comparison after adjusting for covariates.

For the second part of the multivariate analysis, separate random-intercept logistic regression models were conducted to examine the

effect of indicators of social and health assets on the experience of harassment, adjusting for the respondent's age and education. These control variables were selected because they were correlated with both the dependent and independent variables. These models were restricted to girls who participated in groups (Savings PLUS), because only those girls participated in intervention activities to build their social and health assets. All models include an interaction terms between the indicator variable and the time period (baseline versus endline). Estimates for the interaction terms obtained from these models represent the difference the experience of harassment associated with the change in the indicator variable over time (i.e. from baseline to endline).

The basic form of the multilevel random-intercept logit model with interaction term is given by Eq. (1):

$$\text{Logit}(\pi_i) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{1i} * X_{2i} + \dots + X_i \beta_i + \mu \quad (1)$$

where X_1 is the indicator for the intervention period, X_2 is the indicator for exposure to the treatment group, and X_i is the vector of the control variables in the model for person i . The parameter β_0 represents the likelihood of the outcome for non-exposed individuals at baseline, β_1 is the difference in the outcomes for non-exposed individuals over time, β_2 is the difference in outcomes between exposed and non-exposed individuals at baseline, β_3 is the difference in the changes in outcomes between exposed and non-exposed individuals over time i.e. the estimate of the difference between baseline and endline for treatment versus comparison group, β_i is the vector of parameters for the control variables in the model, and μ are the unobserved characteristics of individuals that might be correlated with the outcome.

6. Results

6.1. Demographic characteristics

Descriptive characteristics of the sample at baseline by treatment group are shown in Table 1. There are significant differences between groups in regard to age, religion, education status, socioeconomic status, identification and literacy. Savings PLUS and Savings Only girls were generally similar, but they differed from comparison girls. Approximately half of Savings PLUS (59%) and Savings Only girls (52%) were between the ages of 10 and 14, compared to 72% of comparison girls. Girls in the comparison area were more likely to be Catholic (40%) than those girls in treatment groups and less likely to be Muslim (25%). About a quarter of girls who participated in intervention groups (23% Savings PLUS, 25% Savings Only) were Catholic, while two-fifths (38% Savings PLUS, 41% Savings Only) were Muslims. Very few respondents had ever been married (1% Savings PLUS, 1% Savings Only, 0.6% comparison) and about two-fifths of girls were residing with both parents. The age differences across groups were associated with differences in education status and literacy. Only 5% of comparison girls were not in school at the time of the survey, compared to 10% of Savings PLUS and 9% of Savings Only girls. More than half of girls were able to easily read a sentence (57% Savings PLUS, 65% Savings Only, 53% comparison). Comparison

girls also appeared to be more disadvantaged in regard to household assets. They were significantly less likely to report that their households had electricity (67% Savings PLUS, 72% Savings Only, 54% comparison) or a radio (78% Savings PLUS, 78% Savings Only, 65% comparison) and less likely to personally own a mobile phone (13% Savings PLUS, 15% Savings Only, 4% comparison).

6.2. Sexual harassment

As shown in Table 2, among Savings PLUS girls, there was no significant change in the proportion of girls who experienced indecent touching (7% to 8%) or who were teased by members of the opposite sex (23% to 24%) from baseline to endline. For Savings Only girls, the proportion who experienced indecent touching significantly increased from 9% to 15% ($P < 0.05$), while the proportion who had been teased by males increased from 19% to 25% at endline ($P < 0.1$).

Table 3 shows multivariate results for changes in both indicators of sexual harassment. While there was no significant difference between Savings PLUS girls and comparison girls in regard to experience of harassment, Savings Only girls were significantly more likely to report harassment. Compared to girls in the comparison area, Savings Only girls were more likely (OR = 3.146; $P < 0.01$) to say they had been touched indecently within the previous six months, and 96% more likely to say they had been teased by people of the opposite sex ($P < 0.05$).

6.3. Financial assets

Table 4 shows multivariate, difference in difference results from random-intercept models controlling for age, religion, school status and socio-economic status. The odds-ratios represent the change between baseline and endline for each intervention group versus the comparison group. There was no significant difference in the odds of having a savings plan. Savings Only girls were significantly less likely to be able to name reasons for saving (OR = 0.442; $P < 0.01$). Savings PLUS and Savings Only girls were at least two times as likely to have a budget as girls in the comparison area ($P < 0.01$). As compared to comparison girls, Savings PLUS girls (OR = 2.125; $P < 0.01$) showed a greater improvement in saving than Savings Only girls (OR = 1.691; $P < 0.05$). Among girls who saved any money, both intervention groups showed more than a 99% significant decrease in the use of informal savings methods only ($P < 0.001$).

6.4. Social assets

Three indicators were used to measure social assets: having a place to meet friends outside of the home or school, having someone to borrow money from, and having a female mentor. Based on multivariate results shown in Table 5, for all three indicators, there were no significant differences between intervention groups and the comparison group.

Table 2

Proportion of girls experiencing sexual harassment by study group at baseline and endline.

	Baseline			Endline		
	Savings PLUS (N = 451)	Savings Only (N = 300)	Comparison (N = 311)	Savings PLUS (N = 451)	Savings Only (N = 300)	Comparison (N = 311)
Touched indecently in last 6 months	7%**	9%***	11%	8%	15%*	8%
Teased by people of the opposite sex	23%	19%	23%	24%	25%†	20%

*** $p < .001$.

** $p < .01$.

* $p < .05$.

† $p < 0.10$.

Table 3
Sexual harassment: multivariate logistic random-intercept model results showing differences between study groups and comparison group from baseline to endline.^a

	Change from baseline to endline			
	Ref = Comparison group (N = 311)			
	Savings PLUS (N = 451)		Savings Only (N = 300)	
	OR	[95% CI]	O 0052	[95% CI]
Touched indecently in last 6 months ^b	1.801	0.814–3.989 ^{***}	3.146 ^{**}	1.397–7.082
Is teased by people of the opposite sex ^a	1.300 [†]	0.766–2.203	1.962 [*]	1.088–3.540

^a Models control for age, religion, school status, years of schooling and socioeconomic status.

^{***} p < .001.

^{**} p < .01.

^{*} p < .05.

[†] p < 0.10.

6.5. Reproductive health assets

Table 6 shows multivariate results for changes in reproductive health indicators, including HIV knowledge, HIV testing and knowledge of contraceptive methods. Savings PLUS girls were more likely to know that HIV can be transmitted through sexual intercourse (OR = 3.412; P < 0.01), and more likely to know at least one HIV prevention method (OR = 4.156; P < 0.001) than girls in the comparison area. Savings PLUS girls were also more likely to know a contraceptive method (OR = 2.609; P < 0.01) as compared to girls in the comparison area. There were no significant differences in knowledge of where to get an HIV test and in odds of having received an HIV test between Savings PLUS and comparison girls.

6.6. Additional analysis

To further test the theory of change, we examined the impact of improvement in social and reproductive health assets on the risk of experiencing sexual harassment among girls who participated in the full intervention (Savings PLUS). Due to the small proportion of girls experiencing indecent touching, the analysis focused on the experience of verbal harassment as the dependent variable. Controlling for age and education, separate models were estimated to assess the effect of each of the social asset indicators in Table 5 and each of the reproductive health asset indicators in Table 6. Changes in the following indicators were not significantly associated with verbal harassment: having a place to meet friends outside of the home, having a female mentor,

knowing at least one HIV prevention method, and knowing where to go to get an HIV test. Table 7 shows the remaining indicators that were significantly associated with verbal harassment. For girls who showed improvements from baseline to endline, knowing someone to borrow money from decreased the odds of verbal harassment by 52% (P < 0.05). Improvement in reproductive health knowledge indicators – knowledge of sexual transmission of HIV and knowledge of a contraceptive method – decreased the odds of experiencing verbal harassment by 65% (P < 0.05%). Girls who had gotten an HIV test at endline but not at baseline had 50% lower odds of experiencing harassment (P < 0.05) than those who had not.

7. Discussion/conclusion

The study tests the asset-building framework using data from a study in Uganda. Girls who participated in the full-intervention model (Savings PLUS) are compared with girls who received savings accounts (Savings Only) but did not participate in safe groups with reproductive health and financial education training. Findings show an increase in financial assets for all girls who had savings accounts. Intervention girls were more likely to have saved money within the previous six months, more likely to have a budget, and less likely to only be saving using informal methods. There was also some evidence of the added benefit of the financial education received by Savings PLUS girls. Results also showed that the program was associated with increased girls' health assets through improved reproductive health knowledge due to related health education during safe spaces groups. The impact on social assets was not demonstrated by the results from this study. It is possible that

Table 4
Financial education and savings: multivariate logistic random-intercept model results showing differences between study groups and comparison group from baseline to endline.^a

	Change from baseline to endline			
	Ref = Comparison group (N = 311)			
	Savings PLUS (N = 451)		Savings Only (N = 300)	
	OR	[95% CI]	OR	[95% CI]
Has a plan for saving money	1.470	0.937–2.307	1.382	0.845–2.263
Has a budget	2.318 ^{**}	1.441–3.729	2.442 ^{**}	1.448–3.121
Can correctly name two reasons for saving money	1.104 [†]	0.657–1.856	0.442 ^{**}	0.250–0.783
Has saved any money in the last six months	2.125 ^{**}	1.336–3.381	1.691 [*]	0.025–2.790
Saved using informal method only ^a	0.006 ^{***}	0.001–0.050	0.005 ^{***}	0.001–0.038

^a Models control for age, religion, school status, years of schooling and socioeconomic status.

^{***} p < .001.

^{**} p < .01.

^{*} p < .05.

[†] p < 0.10.

Table 5Social assets: multivariate logistic random-intercept model results showing differences between study groups and comparison group from baseline to endline.^a

	Change from baseline to endline			
	Ref = Comparison group (N = 311)			
	Savings PLUS (N = 451)		Savings Only (N = 300)	
	OR	[95% CI]	OR	[95% CI]
Has a place to meet girl friends other than house or school	1.049*	0.676–1.626	1.304	0.805–2.114
Has someone to borrow money from if needed money urgently	1.335***	0.863–2.067	1.155	0.716–1.862
Has a female adult/mentor who she meets with regularly	1.120**	0.706–1.774	1.143†	0.690–1.894

^a Models control for age, religion, school status, years of schooling and socioeconomic status.

*** p < .001.

** p < .01.

* p < .05.

† p < 0.10.

the indicators used did not adequately capture the benefits of being part of a group and building social networks. Further research is needed using better measures of self-efficacy, social networks and social support.

A key finding of this study is that girls who did not participate in groups (Savings Only) had an increased risk of experiencing sexual harassment than girls who received the social support, financial education and health information. This is similar to other studies showing that a sole focus on economic asset building may increase vulnerable adolescent girls' experience of sexual harassment and violence (Dunbar et al., 2009). Therefore, it is important, especially when working with vulnerable adolescent girls, to not only focus on economic strengthening, but also increase a range of assets together. Further analysis of girls who received the full intervention revealed that social and health assets were protective against the experience of sexual harassment. This might explain why Savings PLUS girls, who gained social and health assets, were less likely to experience harassment than girls who received savings accounts only. A study in Uganda that combined both health and economic components in the intervention found improved health outcomes as well as an increase income generation (Bandiera et al., 2012).

The finding that there are both differences and consequences to having a savings account only, as compared to receiving a holistic intervention including a savings account, is important for the fields of both adolescent girls/youth programming and livelihoods/economic strengthening programming. It is possible that an increase in economic assets, without the support the proper social support and health and life skills training can increase certain aspects of girls' vulnerability – specifically related to experience of sexual harassment and violence. This is a critical dynamic that economic strengthening programs seeking to work with vulnerable adolescent girls must be aware of. It should not be

assumed that simple increase in economic assets is automatically beneficial, without considering the other ramifications those economic assets can have in the life of an adolescent girl.

The data are limited in a couple of key areas. First, the quasi-experimental design allows for selection bias between the intervention and control groups. Intervention girls self-selected to participate in the program and are likely to be systematically different from comparison girls. We control for differences in these time-invariant unobserved characteristics of the individual using two time-points and comparing the change in groups over time. Due to the lack of random assignment to groups, the control group differs from the treatment groups on measured socio-demographic characteristics. The two main differences are that the control group was significantly younger and from a relatively lower SES than the treatment groups. This might affect the control group's ability to build economic assets and likelihood of sexual experience. However, these variables are controlled for during the multivariate analysis. This method is valid despite differences between treatment and control groups at baseline, because it only requires the assumption that outcome trends between baseline and endline are similar (Gertler et al., 2011). We assume that in the absence of the program, the outcome in the treatment group would have moved in tandem with the outcome in the comparison group. Second, not enough questions were asked to understand the pathways to increased experience of sexual violence. Additional research is needed using more rigorous and sensitive measures of harassment and sexual violence to fully understand the relationship between social and economic assets and sexual exploitation, including which assets can be risk factors and which assets can mitigate that risk. Further research is also needed to assess the longer term impact of building social, health and economic assets in adolescence on longer term outcomes such as child bearing, schooling attainment, early marriage, and income generation. Third, as the sample

Table 6Reproductive health: multivariate logistic random-intercept model results showing differences between study groups and comparison group from baseline to endline.^a

	Change from baseline to endline			
	Ref = Comparison group (N = 311)			
	Savings PLUS (N = 451)		Savings Only (N = 300)	
	OR	[95% CI]	OR	[95% CI]
Knows HIV can be transmitted through sexual intercourse	3.412**	1.703–6.834*	1.007	0.497–2.041
Knows at least one HIV prevention method	4.156***	1.891–9.132	1.103	0.500–2.430
Knows where to get an HIV test	1.067	0.634–1.797	1.233	0.686–2.215
Has had an HIV test	1.117†	0.601–2.075	0.606	0.309–1.886
Knows a contraceptive method	2.609**	1.485–4.587	0.882	0.485–1.606

^a Models control for age, religion, school status, years of schooling and socioeconomic status.

*** p < .001.

** p < .01.

* p < .05.

† p < 0.10.

Table 7
multivariate logistic random-intercept model results showing selected indicators associated with experience of sexual harassment from baseline to endline for girls participating in full intervention (Savings PLUS).^a

	Change from baseline to endline	
	Savings PLUS (N = 451)	
	OR	[95% CI]
Has someone to borrow money from if needed money urgently	0.480*	0.242–0.951**
Knows HIV can be transmitted through sexual intercourse	0.345*	0.121–0.980***
Has had an HIV test	0.500*	0.259–0.968†
Knows a contraceptive method	0.353*	0.151–0.824

^a Models control for age and years of schooling.

*** p < .001.

** p < .01.

* p < .05.

† p < 0.10.

included girls ages 10–19, the sample of girls who reported sex was quite small and therefore we were unable to draw conclusions about the effect on delaying sexual debut after just one round of data. Finally, some of the questions asked to measure social assets need to be strengthened to capture the necessary nuance.

In conclusion, the results of the study are promising that they show the full intervention was associated with improvements in social, health and economic assets — without an increase in exposure to harassment or violence. Furthermore, the results suggest that future interventions that seek to increase girls' economic assets, especially through the use of formal financial services, should take into account the necessary non-financial services that build a more holistic set of assets that can help girls improve financially, while at the same time protecting them for other risks around them.

Acknowledgments

The authors thank the following donors for their support: Nike Foundation and Financial Education Fund (FEF2014-R). We also thank our partners MicroSave Consulting, Ltd., Finance Trust Bank and FINCA-Uganda, as well as all the adolescent girls who participated in the study.

References

Amin, S., Rahman, L., Ainul, S., Rob, U., Zaman, B., & Akter, R. (2010). *Enhancing adolescent financial capabilities through financial education in Bangladesh*. Dhaka, Bangladesh: Population Council.

- Austrian, K., & Ghati, D. (2010). *Girl-centered program design: A toolkit to develop, strengthen, and expand adolescent girls programs*. Nairobi, Kenya: Population Council.
- Baird, S., Chirwa, E., McIntosh, C., & Ozler, B. (2010). The short-term impacts of a schooling conditional cash transfer program on the sexual behavior of young women. *Health Economics*, 19, 55–68.
- Bandiera, O., Buehren, N., Burgess, R., Goldstein, M., Gulesci, S., Rasul, I., et al. (2012). Empowering adolescent girls: Evidence from a randomized control trial in Uganda. Retrieved September 3, 2013 from: <http://econ.lse.ac.uk/staff/rburgess/wp/ELA.pdf>
- Bruce, J., & Sebstad, J. (2004). *Building assets for safe and productive lives: A report on a workshop on adolescent girls' livelihoods*. Adolescent Girls Livelihoods Meeting. Population Council.
- Campbell, C., & MacPhail, C. (2002). Peer education, gender and the development of critical consciousness: Participatory HIV prevention by South African youth. *Social Science & Medicine*, 55(2), 331–345.
- Dunbar, M., Maternowska, M., Kang, M., Laver, S., Mudekunya-Mahaka, I., & Padian, S. (2009). Findings from SHAZI: A feasibility study of a microcredit and life-skills HIV prevention intervention to reduce risk among adolescent female orphans in Zimbabwe. *Journal of Prevention and Intervention in the Community*, 38, 147–161.
- Erukhar, A., & Muthengi, E. (2009). Evaluation of Berhane Hewan: A program to delay child marriage in rural Ethiopia. *International Perspectives on Sexual and Reproductive Health*, 35(1), 6–14.
- Gertler, P., Martine, S., Premand, P., Rawlings, L., & Vermeersch, C. (2011). *Impact evaluation in practice*. Washington, DC: The World Bank, 95–105.
- Gregson, S., Terceira, N., Mushati, P., Nyamukapa, C., & Campbell, C. (2004). Community group participation: Can it help young women to Avoid HIV? An explanatory study of social capital and school education in rural Zimbabwe. *Social Science & Medicine*, 58, 2119–2132.
- Hallman, K. (2005). Gendered socioeconomic conditions and HIV risk behaviours among young people in South Africa. *Africa Journal of AIDS Research*, 4(1), 37–50.
- Hallman, K. (2011). Social exclusion: The gendering of adolescent HIV risks in KwaZulu-Natal, South Africa. In J. Klot, & V. Nguyen (Eds.), *The fourth wave: An assault on women — Gender, culture and HIV in the 21st century* (pp. 53–75). New York, NY: Social Science Research Council.
- Jana, S., Basu, I., Rotheram-Borus, M., & Newman, P. (2004). The Songachi project: A sustainable community intervention program. *AIDS Education and Prevention*, 16(5), 405–414.
- Jewkes, R., Nduna, M., Levin, J., Jama, N., Dunkle, K., Puren, A., et al. (2008). Impact of stepping stones on incidence of HIV and HSV-2 and sexual behaviour in rural South Africa: Cluster randomised controlled trial. *British Medical Journal*, 337.
- Kawachi, I., Kennedy, B., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American Journal of Public Health*, 87(9), 1491–1498.
- Kim, J., Ferrari, G., Abramsky, T., Watts, C., Hargreaves, J., Morison, L., et al. (2009). Assessing the incremental effects of combining economic and health interventions: The IMAGE study in South Africa. *Bulletin of the World Health Organization*, 87(11), 824–832.
- Latkin, C., & Knowlton, A. (2005). Micro-social structural approaches to HIV prevention: A social ecological perspective. *AIDS CARE—Psychological and Socio-Medical Aspects of AIDS/HIV*, 17, S102–S113.
- Mabala, R. (2006). From HIV prevention to HIV protection: Addressing the vulnerability of girls and young women in urban areas. *Environment and Urbanization*, 18(2), 407–432.
- PATH & Population Council (2005). *Tuko Pamoja: Adolescent reproductive health and life skills curriculum*. (Retrieved September 3, 2013 from: http://www.popcouncil.org/pdfs/frontiers/Manuals/KARHP_guide1.pdf).
- Putnam, R. (1993). *Making democracy work*. New Jersey: Princeton University Press.
- Putnam, R. (2004). Commentary: 'Health by association': Some comments. *International Journal of Epidemiology*, 33(4), 667–671.
- Ssewamala, F., Alicea, S., Bannon, W., & Ismayilova, L. (2008). A novel economic intervention to reduce HIV risks among school-going AIDS orphans in rural Uganda. *Journal of Adolescent Health*, 42, 102–104.