Inspiring women: Experimental evidence on sharing entrepreneurial skills in Uganda

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Abstract

People living with HIV, in particular women, are often a vulnerable and marginalized group in developing countries. This paper presents the results of a randomized controlled trial designed to test the impact of role models on the livelihoods of women living with HIV in Uganda. Participants in our treatment group were exposed to the screening of short videos of role models telling their personal stories of the challenges and rewards of setting up a business. The videos were screened at HIV clinics over the space of one year. We find that the role models intervention has a positive effect on the probability of starting a business, personal income and income from enterprises and crops. The intervention improves the health of women and children and reduces the probability that children are absent from school. Moreover, women exposed to the videos increase their informal savings. Our results show that providing vulnerable women with role models that empower them to start their own enterprise activities can be effective in improving welfare outcomes.

Key Words: Role models, RCT, HIV.

JEL codes: D03, I15, I3

1. Introduction

On foot of the 2030 Agenda for Sustainable Development, which aims to *leave no one behind*, development programs will increasingly target the most vulnerable and marginalized groups. People living with HIV, in particular women, are one of those groups. With widespread access to antiretroviral (ARV) treatment across the developing world, individuals living with HIV have the opportunity to live full and active lives. Yet, women are often excluded from fully participating in society due to significant social stigma (Canning, 2006). How to inspire behavioral change among marginalized groups has become a focus of recent development programs. The 2015 World Development Report (World Bank, 2015) has as a main theme *Mind, Society and Behavior*, in an effort to investigate how the understanding of human thinking can improve the design of development policies. One potentially effective approach, for which there is an emerging body of evidence, is the use of media and entertainment, and in particular role models, to inspire preference change and attitudes.

In this paper, we explore whether vulnerable groups can be inspired to realize their capabilities and improve their economic situation. Using a randomized controlled trial we examine whether role models and bottom-up knowledge sharing impact on the way in which discriminated individuals behave. The aim of the intervention is to affect how discriminated individuals see themselves and their beliefs about what they can achieve and as a consequence, the amount of effort they are willing to exert in their daily life.

Participants in the project were randomly selected among HIV-positive women attending health clinics in rural Uganda and randomization into treatment took place at clinic level. Patients in treated clinics were invited to the screening of four videos (over the course of a year) of inspiring HIV-positive women, who run successful enterprises. A three-minute video was shown for each round of intervention at three-month intervals, each featuring an inspiring woman, who describes her story

from discovering that she is HIV positive to the challenges and rewards from setting up her own business. The four videos follow a similar plot, although they highlight different aspects of the challenges and goals of the four inspiring women. The first video and the last one are more inspirational in that the women are very charismatic, while the second one stresses the importance of children's education to her as the driving force behind her entrepreneurial activities. The third video highlights more the entrepreneurial and strategic business aspects of starting an enterprise. Each video ends with a final message, similar across the four videos, which aims to communicate strongly to viewers that success is possible for them too. A group discussion took place during and after the video screening, which was led by one of the authors. A set of posters featuring the inspiring women was affixed in each treated clinic at the end of the screening.

We provide evidence that viewing the videos increases the probability of starting a business by 13.8 percentage points. Exposure to the role models also leads to an increase in income from crops and livestock, and enterprise income one year after the start of the intervention. On average, women in the treatment group experience a staggering increase in income of 158 per cent. Moreover, the videos are found to lead to better health among women and their children and a lower proportion of children absent from school. This is likely due to a combination of higher incomes and a direct effect through some of the messages contained in the videos regarding female health and the schooling of children. Finally, women in the treatment group save more: savings of participants exposed to the videos are 136 per cent higher than savings of individuals in the control group after the intervention. These findings suggest that this simple, cost effective and easily scalable intervention could have long-term effects. Our results show that providing vulnerable women with role models that empower them to start their own enterprise activities may be very effective in improving welfare outcomes.

We explore two potential mechanisms. First, the role models are providing inspiration, which empowers women to change their actions. Second, the role models perform a training function, as participants act upon the information provided in the videos. We find evidence for both mechanisms. In relation to the former, we find that women exercise more control over their personal resources suggesting that the role models are empowering for women, not only leading them to earn higher incomes, but also leading them to have more control over what that income is spent on. In relation to the latter, the new businesses started by the women are similar to those of the role models and are in line with the sequencing of the screening of the videos, hence supporting the training function of the videos.

Our paper contributes to the emerging literature that examines the use of media and entertainment for achieving development goals.[1] In addition to imparting educational information, education-entertainment (*edutainment*) programs have also focused on the use of role models to inspire preference change and attitudes. Bjorvatn et al. (2015) find that exposure to an *edutainment* program in Tanzania, aimed at secondary schools students had a positive impact on entrepreneurial activities, but a negative one on students' educational performance. Cheung (2012) provides evidence that exposure to a radio edutainment program positively affects women's decision making power and children's primary school attendance in Cambodia. A recent paper by Banerjee et al. (2017) investigates the effect of an MTV TV series on attitudes and behavior related to HIV of young people in Nigeria.[2]

The paper closest in spirit to ours is Bernard et al. (2014) who investigate the impact of screening documentaries about people who had succeeded in agriculture or small business in Ethiopia. Six

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[1] See La Ferrara (2016) and DellaVigna and La Ferrara (2015) for a review of the literature. Jensen and Oster (2009) and La Ferrara et al. (2012) show how fertility is affected by being exposed to TV fiction. Ravallion et al. (2015) provide evidence that a public information campaign on an anti-poverty program in India changed perceptions, but not reality in the treated villages.

[2] The impact of entertainment shows on behavior have also been examined in developed country contexts. See, for example, Kearney and Levine (2015) show the negative effect of the MTV program *16 and Pregnant* on teen birth

months after the screening of the documentaries, aspirations are improved among treated individuals. In particular, the authors provide evidence that the documentaries impacted on savings and credit behavior, and children's education.

Our paper contributes to this literature in three ways. First, compared with other motivational campaigns our bottom-up approach focuses on a particularly vulnerable and excluded group, women living with HIV. A few studies show how stereotypes can affect the way individuals from disadvantaged groups behave and the way they perceive their abilities. Guyon and Huillery (2014) provide evidence that disadvantaged individuals perform worse when they are reminded of their group. Similarly, Hoff and Pandey (2006, 2014) show how making identity salient can negatively affect performance of low-caste boys. We find evidence that removing the stigma associated with being HIV positive, by imparting the message that it does not prevent women from fully engaging in economic activities, improves outcomes.

Second, our role models are relatable to our sample and have achieved attainable goals. The message our role models portray is indeed inspiring but is also realistic. We show that even with just marginally more successful women there can be significant effects.[3] Bernard et al.'s (2014) role models stress the importance of the support of elders, extension officers and advisors. For vulnerable groups such as women living with HIV this can be problematic as they often do not have access to these services and supports. Our role models identify hardships that they encountered on the way which makes our subjects relate to them. They also emphasize the importance of asking for help but not relying on it.

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[3] Beaman et al. (2009) and Beaman et al. (2012) examine the impact of female role models in leadership positions and find positive impacts on stereotypes about the role of women in public and domestic life and the effectiveness of female leaders in the case of the former, and the career aspirations and educational attainment of adolescent girls in the case of the latter. We show that even relatable female role models can lead to behavioural change.

Third, the videos are not just motivational but also convey practical information. We find evidence that the information the inspiring women convey in the videos is taken on board by the women in our sample and changes the decisions they make in relation to their economic activities exactly in the way we would expect. This suggests that role models could be used not only as a tool for inspiring individuals but is also a possible alternative to costly education and training programs which have often been found to have mixed effects on economic outcomes (see, for example, Bandiera et al. (2017) and de Mel et al. (2014)).

The rest of the paper is organized as follows. In section 2 we set out the context for our study, and describe the intervention and the experimental design. Section 3 describes the baseline data, discusses attrition and presents the econometric specification. The results are presented in section 4 and section 5 concludes.

2. Sampling and Experimental Design

Participants in the project were randomly selected among HIV-positive women attending health clinics in Uganda.[4] The data used in our analysis consist of a sample of patients attending type III and IV clinics, run by our partner institution, the Joint Clinical Research Centre (JCRC).[5] A health centre III facility is located at sub-county level and serves about 20,000 people. These usually have about 18 staff, led by a senior clinical officer with a general outpatient clinic, a laboratory, and a maternity ward. Health centre IV facilities serve a county or a parliamentary constituency with about 100,000 people benefitting from its services. It provides the same services as health centre III clinics, but also has wards for men, women, and children, and can admit patients. In addition, they have a

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[4] The RCT was registered on the AEA RCT Registry on July 2014.
[5] Uganda's health system is divided into national and district-based levels. At the national level are the national referral hospitals, regional referral hospitals, and semi-autonomous institutions including the Uganda Blood Transfusion Services, the National Medical Stores, the Uganda Public Health Laboratories and the Uganda National Health Research Organization (UNHRO) (MoH, 2010). The district-based health system consists of 4 levels of health centres (I-IV). Type I and II clinics were ruled out from the analysis due to their small catchment area.

senior medical officer, an additional doctor, as well as a theatre for carrying out emergency operations (MoH, 2000).

Random sampling was performed in the following way. Four sub-regions were randomly selected (Central, Mid-Northern, Mid-Western, South-Western) out of the six Ugandan sub-regions.[6] Within each sub-region, 4 clinics (type III and IV), among those run by our partner institution JCRC, were randomly selected. Clinics within each sub-region were randomly assigned to the control or the treatment group, for a total of 8 clinics in the treatment group and 8 clinics in the control group. The fieldwork team, led by two of the authors, set appointments for a three-day visit in each clinic. Participants in the project were selected among the HIV female patients attending the clinic on the days of the fieldwork visit. The fieldwork team was introduced to the patients waiting for their medical appointments by the medical staff, while a description of the project was provided to potential participants by the fieldwork leaders. Once participation was agreed and written consent sought, enumerators positioned themselves on the clinic grounds (in the open) and proceeded with face-to-face interviews, collecting information on demographics, health, agricultural production, business activities, household members, savings and credit. The baseline took place between April and September 2014 and on average of 132 patients were recruited in each clinic. Appointments with the fieldwork team for the subsequent intervention/interview rounds were made to coincide with the participants' routine medical appointments.[7]

Treatment: Role models videos

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[6] Of the four sub-regions, the Mid-Northern is the one with the highest poverty level, as shown in Table B1 of Appendix B, with 43% of the population classified as poor.

[7] All participants in the treated and control clinics received a small monetary compensation for attending the clinic on the days of the interview. Similarly, all health workers in treated and control clinics received a small monetary incentive during each round of the survey.

The videos were screened in 8 treatment HIV clinics, distributed across the four sub-regions. A three-minute video was shown for each round of intervention, each featuring an inspiring woman, who describes her own true story from discovering her HIV status to the challenges and rewards from setting up their own business. A group discussion took place during and after the video screening. Participants were divided into groups, as they came along for their visit at the health clinic. For each group, the video was shown a first time, with one of the co-authors interrupting the screening at set moments, to recap the main highlights of the woman's story. The interruptions were determined in advance at the start of each round of the intervention. After the first screening, the video was shown one more time to the same group of participants, but without any interruption. A group discussion followed the second screening of the video. Specific instructions were provided to guide the group discussion.

The casting of the inspiring women was conducted by our partner institution, JCRC, and the women were selected among the HIV patients attending their clinics.[8] The casting was conducted with the aim of offering role models that could be relatable to our sample and had achieved attainable goals. Six women were filmed and eventually four videos were picked to be screened. The woman featuring in the first video is from the Central region of Uganda and speaks Luganda. The remaining three women are from the South West of Uganda and speak Rutooro. The four women in the videos were given the option of revealing their HIV status, ahead of the filming. They were informed that the videos would be screened in health clinics and who the target audience was. All four of them decided to reveal their HIV status. Filming took place in October 2014 by director Tom Burke of Broadstone Films, an Irish-based video production company.

The videos were shot exclusively for the purpose of this project and they all featured the same structure: a) background information; b) description of how the business was started; c) discussion

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[8] The casting did not involve any of the women in our sample of clinics.

of the challenges faced; d) targets for the future; e) final inspirational message.[9] The stories presented in the videos mainly relate to agricultural business activities, and advice is given by the inspiring women regarding business strategies in livestock trade and setting up small enterprises. Therefore we would expect a greater impact of the treatment on this form of income compared with other income-generating activities. Although the plot was similar across the four videos, each of them highlights different aspects of the challenges and goals of the four inspiring women. The women in the first video and the last are very charismatic and positive. The woman in the second video stresses the importance of her children's education as a driving force behind her entrepreneurial activities. The woman in the third video focusses on providing business advice and tips.[10] The role models were asked to conclude their interview with a message to encourage viewers that success was possible for them too. For example, the second video featured Alice, whose message was "*I run my own business. I have done this and you too can do it*". Posters featuring the inspiring women were affixed in each treated clinic at the end of the screening to reinforce the inspirational message.

The first intervention round took place between October and December 2014 and each clinic was visited for two days. Participants in both control and treatment groups were reminded by phone to attend their clinic for their routine medical appointments. The first video (Sarah's story) was screened in the treatment clinics, followed by a brief face-to-face survey.[11] The second intervention round took place between January and March 2015, during which the second video (Alice's story) was screened. The second intervention followed the same pattern as the first one, with a two-day visit to each clinic. The mid-line evaluation took place at the same time as the third intervention round (Jovia's story), and a longer questionnaire was administered by the enumerators. The fourth

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[9] The video talking points were agreed with the director in advance of the shooting. The videos are the edited version of the interviews based on the talking points. The first video is in Luganda language, the rest of the videos is in Rutooro. An interpreter was hired to translate the videos in the clinics in the Mid-Northern clinics. The full transcripts of the videos and links are provided in Appendix A.

[10] The order of the videos was decided by the researchers on the basis of the inspiring women's interviews.

[11] The face-to-face surveys during the intervention phases gathered basic information about any changes affecting the woman (e.g. pregnancy, illness), attendance at the HIV clinic, ARV use and eating habits.

and last intervention round (Mugenyi's story) took place between July and August 2015. The end-line evaluation was administered between September and December 2015.

Control group

Participants in the control group were recruited into the project in the same way as participants in the treatment group. After the baseline, participants in the control group were invited to attend the health clinics for their medical appointments and for the brief face-to-face survey. The visits to the control clinics took place at the same time as the treatment interventions. At each meeting, the women in the control group were administered a short questionnaire, similar to the questionnaire for the treatment group. At each meeting, participants in the control group gathered around the grounds of the HIV clinic, while waiting for their interviews and their medical appointments, in the same way as participants in the intervention groups. The only difference was that participants in the treated clinics were shown the videos while waiting.

[Insert Figure 1 here]

3. Empirical strategy

We test the impact of the treatment, exposure to role models via videos, on a set of core outcomes including entrepreneurial activities, income and livelihoods, a set of secondary outcomes including health, education, savings and credit and, finally, a set of outcomes that help to explain the underlying mechanisms at work. Equation 1 presents the econometric specification used in our analysis.

$$O_{it} = \delta_1 (Video_i * Evaluation_t) + \gamma Evaluation_t + \alpha_i + \mu_t + \varepsilon_{it} \tag{1}$$

10

where O_{it} is the particular outcome variable of interest for woman i in time period t. ***Video****$_i$* is a dummy indicator for whether woman i is in a treatment clinic. ***Evaluation****$_t$* is a dummy indicator for the time period – zero for the baseline and one for the mid-evaluation and end-line evaluation; α_i are participant fixed effects; μ_t are round fixed effects. Standard errors are clustered at the clinic level. Given the small number of clusters, we correct the clustered standard errors using wild bootstrapped standard errors as outlined in Cameron et al. (2008). This method is more reliable than other asymptotic tests with data clustered in as few as five groups.

Descriptive statistics

   Our sample at baseline consists of 2,121 women. Table 1 presents a series of balancing tests to compare the control group with the treatment group, prior to the intervention.[12] We find no evidence of statistically significant differences at baseline in terms of any of the control variables which include age, household size, marital status, number of years since being diagnosed as HIV positive, number of years on ARVs, and education status of the household head. In terms of health and education outcomes the only statistically significant difference at baseline is that a higher percentage of children are reported to be absent from school in the treatment group compared with the control group. There is no statistically significant difference in school enrolment rates between the two groups. In terms of income and livelihoods, we find no difference in food expenditure but a small difference in total personal income with households in the control group having slightly higher incomes than those in the treatment group (significant at the 5 per cent level). There are no statistically significant differences in sub-categories of personal income nor is there any difference

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[12] Significance levels are based on p-values of the Multiple Hypothesis Testing procedure as detailed by List et al. (2016).

across the treatment and the control groups in the percentage of participants working for a wage or running an enterprise (i.e. being self-employed). Given the potential impact of role models on empowerment and decision bargaining within the household, panel E presents the balancing tests in relation to how decisions are taken within the household. A higher percentage of participants in the control group maintain that decisions on individual income are taken by the respondent alone, while a lower percentage claims that decisions are taken jointly with the partner or somebody else in the household. There are no statistically significant differences in the control of household income across treatment and control groups. Overall, the two samples appear to be balanced and when statistically significant differences emerge, they appear to go against the treatment having any impact.

[Insert Table 1 here]

Follow up surveys and attrition

As detailed in the previous section, participants in the project are HIV patients attending their scheduled routine medical appointments at their regular health clinics. Interviews and video screenings took place while patients waited for their medical appointment, or soon after. All participants were contacted by phone with information about their next medical appointment and the meeting with the research team. Given the population under consideration, attrition might arise for four reasons: missed medical appointments, either because the women are too weak to travel to the clinic or because they are busy on the day of the visit; transfer to another HIV clinic; refusal to participate in the project; or death. According to the information provided by the clinic staff to the research team, the first main reason that women left the project was due to the assignment of patients to other HIV clinics. Re-assignment was due to bureaucratic reasons and was not in any way related to our project. The second main reason was death. The attrition rate between the baseline

12

and the mid-line was 38%, while the attrition rate between the baseline and the end-line was 44%. Table 2 presents the attrition rates over the project time period. The pattern of attrition is similar across the control and treatment groups.[13] The majority of women that left the study did so between the baseline and the first intervention, for the reasons mentioned above, while there was very little attrition between intervention/evaluation rounds.

[Insert Table 2 here]

4. Results

The first set of outcomes we consider captures the extent to which we observe behavioral change in relation to enterprise activities, income and livelihoods as a result of the intervention. The results for each of these outcome variables using the specification in equation (1) are presented in Table 3. Standard errors are clustered at the clinic level and p-values for the t-test constructed using the wild bootstrapped standard errors are presented in brackets. We also present the difference in means between the treatment and control groups at end-line but rely on the findings from the difference-in-difference specification which addresses any concerns about balance across treatment and control groups at baseline. We also report the p-value of the Multiple Hypothesis Testing procedure outlined by List et al. (2016) for the tests of the differences in means presented in each table.[14]

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[13] . Balancing tests for the attrited sub-sample are presented in Table B2 of Appendix B. Significance levels are based on p-values of the Multiple Hypothesis Testing procedure as detailed by List et al. (2016).The women who left the study were on average 2.5 years younger in the treatment group compared with the control group and have on average a greater proportion of children who they report were absent from school. For cohabiting couples they are also slightly less likely to have control over their personal incomes within the household. The attrited sub-sample is balanced on all other characteristics.

[14] As a further robustness check on our results we perform randomization inference in the form of placebo tests whereby we randomly assign women to treatment and control groups within regions and estimate each specification. We repeat this exercise 1,000 times for each outcome and test the statistical significance of the resulting distribution of coefficients. We find no evidence of an impact of treatment on any of the outcomes confirming that our results cannot be replicated with random assignment across treatment and control groups. The results are presented in Appendix B (see Table B3).

We find that women in treatment clinics are more likely to operate an enterprise (column 1), in accordance with the message of the videos, which highlights the stories of women running their own business enterprises. The effect is sizable with women in the treatment clinics 13.8 percentage points more likely to operate an enterprise as a result of the intervention than women in the control group. This finding provides evidence that exposure to role models has a positive impact on the probability of operating a business. We do not find any impact on the probability that the women in treatment clinics work for a wage (column 2). This result is to be expected, given the message contained in the video, which featured self-employment examples. Column 3 reports the impact of the treatment on the (log of) total personal income. The videos were effective in increasing total personal income and the magnitude of the effect appears large. Exposure to the videos increased women's personal incomes by 158 per cent. The large magnitude can be explained by the low average personal incomes at baseline.[15] It should be noted, that there is no statistically significant difference in average personal incomes between the treatment and control groups at end-line. We investigate this further in Table 4 below.

In column 4 of Table 3 we find that the treatment had no impact on other household income (excluding the personal income of the women), which is to be expected given that it is only women's personal economic activities that are the subject matter of the videos. We investigate the impact on enterprise activity and personal incomes further by separating the different components that make up total personal income. Column 5 shows that the treatment had no effect on income from waged employment. This is also to be expected given that the message contained in the videos targets enterprise activity and not waged employment. Next, we investigate the effect of the treatment on crop income, income from livestock and income from enterprises. Given that the stories presented in the videos mainly relate to agricultural business activities, and in particular regarding business

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[15] Standardizing the effect yields a standardized coefficient of 0.568. The standardized coefficients are reported in Table B4 of Appendix B.

strategies in livestock trade and setting up small enterprises, we would expect to see a greater impact of the treatment on income generated from these activities. This is indeed the case, as shown in Column 6, 7 and 8. Women in treated clinics have a higher crop income, a higher livestock income and a higher enterprise-related income.[16]

In Table 4 we separate out the effect of the videos on income and its components at mid-line and end-line. It appears that the videos provide an initial boost in total personal income as evident from the large effect at mid-line. We find no evidence of an additional increase in incomes as a result of the treatment between mid-line and end-line. When we disaggregate by the different components of income we find that while both income from livestock and non-agricultural enterprises continue to increase between mid-line and end-line, crop income does not increase any further and there is some (albeit weak) evidence that wage income declined.

Our findings suggest that providing vulnerable women with role models that empower them to start their own enterprise activities may be very effective in improving objectively-measured welfare outcomes, namely income. While the effect is strongest in the short-run there is evidence, at least for the activities in focus, that personal incomes from these sources continue to grow in the medium term.

[Insert Table 3 here]

[Insert Table 4 here]

As discussed in the introduction, two mechanisms might be at play. First, role models provide the information that participants may need to set up their own business, thereby providing a training function, and second, the role models provide inspiration, which empowers women to change their

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[16] We do not find any specific pattern in the type of new enterprise set up by participants in the treatment group. Results are available upon request.

actions. To explore the first channel, we consider the extent to which the actual content of the videos and the timing of the screening of the different videos maps to changes in associated outcomes. The inspiring women give some practical advice on business strategies in relation to livestock trade and in particular with respect to poultry and pigs trade. Table 5 explores the changes in the portfolio of livestock. Women in the treated clinics are found to increase the number of poultry units and pig units. This is indeed in line with the message in the videos: the third and fourth videos give advice on why to keep chickens ("*because from eggs alone you can buy books*") and what the best strategies are for trading chickens ("*The chickens I never sell at once but keep selling some and replacing them*"). Similarly, for pigs, the inspiring woman in the third video gives some practical advice on the best strategies for selling pigs ("*For me, I sell piglets for 50,000. If you buy a female pig within a year, you can make a lot of money. Imagine a pig can produce 9-12 piglets and for 50,000 each piglet, how much is that?*"). No similar advice is given with respect to cow or goat trade. In line with the video content, we do not find any impact of the treatment on the number of cows or goats held by participants in treated clinics. Table B5 in the Appendix further explores the matching between video content and decisions in relation to livestock units. Chickens are mentioned in video 3 and video 4, while pig rearing is mentioned across the four videos. Indeed, when we explore the timing of the effect, we see that exposure to the treatment leads to a high number of poultry units in the end-line evaluation only, with no statistically significant difference at mid-line. Moreover, the treatment has a positive and statistically significant impact on the number of pigs at both the mid and end-evaluation.

[Insert Table 5 here]

The second video features the story of an inspiring woman who runs a retail shop. Among the four inspiring women, she is the only one running such a business activity. If the role model videos

were effective in providing information and shaping the behavior of viewers, we would expect an impact of the treatment on the probability of opening a retail shop in the mid-line evaluation, which was conducted three months after the second video was screened. This is indeed the case, as shown in Table 6. Exposure to the video has a positive and statistically significant impact on the probability of opening up a retail shop at mid-line evaluation. The results are confirmed also when we restrict to the sample of participants who started a business. The coefficient for the impact of the treatment at end-line is statistically insignificant suggesting that there is no difference between the mid-line and end-line in terms of the extent of the impact. Although, it should be noted that the difference in simple means at end-line is statistically significant, even when multiple hypothesis testing is accounted for.

[Insert Table 6 here]

Taken together, these results show that the participants act upon the information included in the videos.[17] To explore the second mechanism, the inspirational channel, in Table 7, we present the results of the impact of the role models on intra-household bargaining power. We measure bargaining power through a series of questions about the control of resources within households. We restrict our sample to women who, at baseline, co-habit with a partner. We find that the video campaign impacts positively on the probability of a women having sole control over her personal income and negatively on joint control with her partner or spouse. We find no impact on the control over household income. This suggests that the role models campaign is also empowering for women, not only leading them to earn higher incomes, but also leading them to have more control

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[17] Given that outcomes are self-reported it is possible that the women in the treatment group feel compelled to respond to questions in a particular way to make it seem like they have been affected by the intervention. This is, however, very unlikely, given the subtlety of the specific set of outcomes that are affected (i.e. chickens and pigs) and others that are not (i.e. goats and cows).

over what that income is spent on. The lower panel of Table 7 shows, however, that we cannot reject the null hypothesis of no statistically significant difference between the treatment and control group at end-line suggesting that this effect may be short-lived. In order to better investigate this issue, Table 8 reports the impact, separating the effect of the video campaign at the mid-evaluation and the end-line evaluation. It appears that the effect on empowerment slightly decreases over time, and the main effect seems to take place at mid-line.

[Insert Table 7 here]

[Insert Table 8 here]

Other results

The stories of the role models were not scripted and the women provided other types of advice during the videos in particular in relation to health and education. One of the recurring messages in the videos is related to the HIV status of the role models. This was not intended when the talking points of the interviews were drafted by the research team, but it emerged organically in the casting ahead of the filming and during the interview. Indeed, all of the four inspiring women mentioned that they were diligent in taking the ARV drugs and in looking after their health. Similarly, the importance of education and issues and strategies related to paying school fees emerged in each of the interviews. Therefore, in Table 9 we explore the impact of the intervention on the health of the women and children and on children's education. We find that the videos led to better health among women, as the intervention decreases the probability of being sick over the period prior to the

interviews by almost 10 percentage points (column 1).[18] Even more interestingly, the percentage of children that are reported as being sick is also lower in the treatment group. This result might arise for two reasons: first, women's higher income might translate into more resources being devoted to children's health; second, if children are also HIV positive, then reinforcing the message that it is important to take the ARV drugs might have a positive effect on children's health as well.

Columns 3 to 5 investigate the impact of the role models on children's education. A smaller percentage of children are reported to be absent from school among the women in the treatment group (column 3). In particular, a lower proportion of children are absent from school because of the inability to pay school fees (column 4). However, we find no evidence of the treatment having an impact on the probability of not attending school due to sickness (column 5). Table 10 explores whether the effect of the role models on children's education is different at mid-line and end-line. Columns 1 to 3 provide evidence that, although the effect decreases over time, the role models have a statistically significant impact on children's health and their education.

[Insert Table 9 here]

[Insert Table 10 here]

Finally, Table 11 explores the impact of the videos on food expenditure, formal and informal savings, formal and informal credit. Given the message of one of the videos on the importance of savings to invest in the business enterprise, we would expect the treatment to have an impact on savings. Indeed, this is the main finding emerging from Table 11: women in the treatment group are

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[18] In the absence of official data on the health status of women, the health measures that we use is self-reported by the women in our sample. Women are asked the following question: 'In the past 30 days, have you suffered from any illness or injury that prevented you from going about your daily activities?'. They are also asked to report this information for all household members including children. This measure may capture both changes in health and changes in the general well-being and attitudes of the women. This should be borne in mind when interpreting these results.

found to have more informal savings (column 3), while no effect is found for formal savings or credit. We find that the treatment increases savings by 136 per cent, although this is from a very low level of savings at baseline.[19] The increase in savings accounts for around 30 per cent of the increase in income. This is indeed a remarkable result, which may lead to future investments in business activities.

[Insert Table 11 here]

5. Conclusions

In this paper we test the impact of a role models intervention on the enterprise activity, income and livelihoods of women living with HIV in rural Uganda. Participants in our treatment group were exposed to the screening of four 3-minute videos of inspiring women, i.e. women living in similar situations to the women in our study. In the videos, each of the inspiring women tells their story of the difficulties and rewards of setting up a business. The videos encompass personal stories (being HIV positive, the importance of education for their children) along with practical advice on setting up and running a business. The four videos were screened at HIV clinics over the space of one year. We find that the role models intervention has a positive effect on the probability of starting a business, personal income and income from enterprises and crops. We provide evidence of two channels at work: an information channel, whereby women learn from the content of the videos and change their behavior accordingly; and an inspirational channel which empowers women as shown through an increase in control over personal resources within the household. The intervention also improves the health of women and children and reduces the probability that children are absent

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[19] The standardized effect is 0.273 (see Table B4 of Appendix B). Bernard et al. (2014) also find an effect of exposure to the role models documentaries on savings with savings almost 50 percent higher in the treatment group relative to the control group. They attribute this to increased aspirations among the treated group which lead to more forward-looking behavior.

from school. Moreover, we find a positive impact of the role models intervention on the informal savings of women. The latter two findings suggest that this simple, cost effective and easily scalable intervention could have long term effects on welfare outcomes. Our findings show that providing vulnerable women with role models that empower them to start their own enterprise activities may be very effective in improving quantifiable outcomes.

Overall, our results shed light on the extent to which role models can have a real impact on the livelihoods of disadvantaged groups (women) who carry a social stigma (being HIV-positive). They also allow us to understand better the underlying behavioral changes that lead to improved outcomes for women and their children. The large scale and geographical scope of the sample makes our results highly relevant to policy makers in Uganda and elsewhere in sub-Saharan Africa.

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Figure

Figure 1: Timeline

April-Sept 2014 Baseline	Oct-Dec 2014 Intervention 1	Jan – Mar 2015 Intervention 2	Apr – May 2015 Intervention 3/Mid-evaluation	July-Aug 2015 Treatment 4	Sept-Dec 2015 Endline evaluation
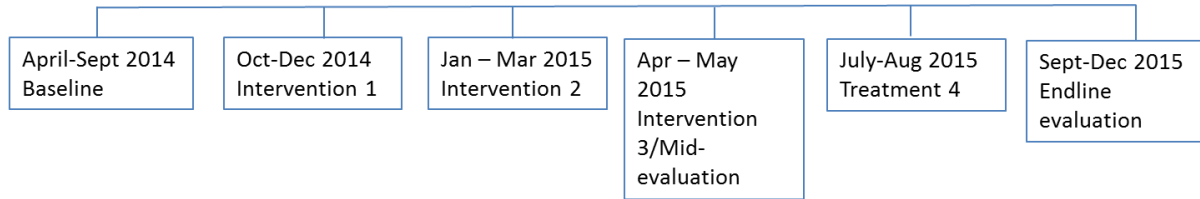
Tables

Table 1: Summary statistics and balancing tests

A. Demographics	Mean Control	Mean Video	Difference	Stat. Sign.
Age	38.899	37.564	1.335	
HH size – Nr adults	1.333	1.258	0.074	
HH size - Nr Children	2.258	2.287	0.029	
Widow/Single	0.582	0.556	0.026	
Years diagnosed HIV	2.991	2.726	0.265	
Years on ARV	5.504	5.392	0.112	
No education	0.354	0.344	0.010	

B. Health and Children Education	Mean Control	Mean Video	Difference	Stat. Sign.
Illness	0.270	0.256	0.014	
% children sick	0.100	0.120	0.020	
% children in school	0.916	0.889	0.028	
% children absent school	0.359	0.469	0.110	***
Absence - school fees	0.313	0.390	0.077	
Absence - illness	0.220	0.223	0.003	

C. Income and Livelihoods	Mean Control	Mean Video	Difference	Stat. Sign.
Food expenditure (log)	9.470	9.339	0.131	
Total personal income (log)	10.127	9.636	0.491	**
Other HH income (log)	3.988	3.770	0.219	
Wage – personal (log)	5.054	5.203	0.149	
Crop income – persona l(log)	4.155	3.634	0.521	
Livestock income – personal (log)	1.045	1.166	0.121	
Non agricultural income – personal (log)	1.906	2.121	0.215	
Work for wage	0.471	0.498	0.027	
Self-employed	0.268	0.283	0.015	

D. Savings and credit	Mean Control	MeanVideo	Difference	Stat. Sign.
Informal savings – amount (log)	0.770	0.941	0.171	
Formal savings – amount (log)	2.479	2.330	0.149	
Informal credit – amount (log)	0.722	0.678	0.044	
Formal credit – amount (log)	1.735	1.458	0.277	

E. Decision on: _(Cohabitant participants only)_	Mean Control	MeanVideo	Difference	Stat. Sign.
Individual income – alone	0.919	0.858	0.061	***
Individual income – husband	0.017	0.025	0.007	
Individual income – joint	0.060	0.111	0.051	**
Household income – alone	0.533	0.530	0.003	
Household income – husband	0.148	0.140	0.008	
Household income - joint	0.219	0.236	0.017	

Table 2: Sample and attrition

	Full Sample	Control	Video
Baseline	2,121	1,067	1,054
Intervention 1	1,201	644	557
Intervention 2	1,240	607	633
Intervention 3/Mid-line	1,324	669	655
Intervention 4	1,225	600	625
End-line	1,179	596	583

Table 3: Income and livelihoods

	(1) Operates an Enterprise	(2) Works for a wage	(3) Personal Income	(4) Household Income	(5) Wage Income	(6) Crop Income	(7) Livestock Income	(8) Enterprise Income
Eval x video	0.138	-0.083	1.580	0.647	-0.622	1.585	0.901	1.035
s.e.	(0.068)*	(0.075)	(0.278)***	(0.653)	(0.532)	(0.574)**	(0.207)***	(0.328)***
P-value WB s.e.	[0.066]*	[0.332]	[0.000]***	[0.324]	[0.264]	[0.006]***	[0.002]***	[0.006]***
Evaluation	-0.006	0.004	-1.187	-0.261	-0.367	-0.153	-0.054	-0.141
s.e.	(0.035)	(0.045)	(0.258)***	(0.447)	(0.416)	(0.432)	(0.137)	(0.212)
Baseline mean control	0.268	0.470	10.127	3.988	5.054	4.155	1.045	1.906
End-line diff in means:								
videos − control	0.156	-0.083	0.052	0.401	-1.002	0.656	0.958	1.144
t-test (p-value)	0.000	0.004	0.578	0.203	0.001	0.022	0.000	0.000
MHT (p-value)	0.000	0.035	0.994	0.901	0.000	0.296	0.000	0.000
Observations	3,969	3,974	3,705	3,752	3,941	3,941	3,943	3,946
R-squared	0.030	0.015	0.088	0.003	0.018	0.027	0.022	0.039
Number of women	1,502	1,502	1,485	1,490	1,496	1,502	1,502	1,502

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at end-line accounting for multiple outcomes (List et al, 2016). .*** p<0.01, ** p<0.05, *p<0.1

Table 4: Income and livelihoods – supplementary

	(1) Personal Income	(2) Wage Income	(3) Crop Income	(4) Livestock Income	(5) Enterprise Income
Mid-line x videos (1)	2.586	-0.330	2.123	0.938	1.342
s.e.	(0.348)***	(0.686)	(0.606)***	(0.330)**	(0.379)***
P-value WB s.e.	[0.000]***	[0.655]	[0.006]***	[0.022]**	[0.002]***
End-line x videos (2)	0.407	-0.963	0.955	0.857	0.675
s.e.	(0.253)	(0.497)*	(0.638)	(0.216)***	(0.370)*
P-value WB s.e.	[0.162]	[0.066]*	[0.164]	[0.002]***	[0.090]*
Mid-line	-1.659***	-0.510	-0.414	-0.072	-0.291
s.e.	(0.254)	(0.479)	(0.448)	(0.164)	(0.240)
End-line	0.618***	0.847**	0.525	0.345**	1.015***
s.e.	(0.115)	(0.349)	(0.401)	(0.137)	(0.202)
F-test of (1)=(2)	60.71***	1.18	5.78**	0.04	3.38*
Mid-line diff in means:					
videos – control	2.097	-0.167	1.603	1.097	1.346
t-test (p-value)	0.000	0.559	0.000	0.000	0.000
MHT (p-value)	0.000	0.914	0.000	0.000	0.000
End-line diff in means:					
videos – control	0.052	-1.002	0.656	0.958	1.144
t-test (p-value)	0.578	0.001	0.022	0.000	0.000
MHT (p-value)	0.994	0.000	0.296	0.000	0.000
Observations	3,705	3,941	3,941	3,943	3,946
R-squared	0.128	0.019	0.031	0.022	0.041
Number of women	1,485	1,496	1,502	1,502	1,502

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at mid-line and end-line accounting for multiple outcomes (List et al, 2016). Sample in column (2) restricted to women who start a business between rounds. *** p<0.01, ** p<0.05, *p<0.1

Table 5: Livestock

	(1) Poultry units	(2) Cows Units	(3) Goat units	(4) Pig units
Eval x video	0.636	-0.127	0.154	0.260
s.e.	(0.351)*	(0.394)	(0.168)	(0.069)***
P-value WB s.e.	[0.082]*	[0.729]	[0.436]	[0.006]***
Evaluation	0.351	-0.039	-0.092	-0.003
s.e.	(0.241)	(0.093)	(0.071)	(0.024)
Baseline mean control	1.96	0.30	0.82	0.20
End-line diff in means:				
videos – control	1.617	0.327	0.550	0.382
t-test (p-value)	0.001	0.000	0.000	0.000
MHT (p-value)	0.013	0.000	0.000	0.000
Observations	3,980	3,980	3,980	3,980
R-squared	0.005	0.000	0.002	0.024
Number of women	1,502	1,502	1,502	1,502

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at end-line accounting for multiple outcomes (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.1

Table 6: Retail business

	(1) Retail	(2) Retail (conditional on starting business)
Mid-line x videos (1)	0.113	0.170
s.e.	(0.031)***	(0.079)**
P-value WB s.e.	[0.000]***	[0.076]*
End-line x videos (2)	0.045	0.107
s.e.	(0.045)	(0.110)
P-value WB s.e.	[0.356]	[0.412]
Mid-line	-0.041	0.257
s.e.	(0.017)**	(0.063)***
End-line	0.051	0.225
s.e.	(0.032)	(0.089)**
F-test of (1)=(2)	3.44	0.20
Baseline mean control	0.105	0.014
Mid-line diff in means:		
videos – control	0.123	0.163
t-test (p-value)	0.000	0.019
MHT (p-value)	0.000	0.019
End-line diff in means:		
videos – control	0.065	0.108
t-test (p-value)	0.001	0.138
MHT (p-value)	0.012	0.138
Observations	3,980	597
R-squared	0.024	0.247
Number of women	1,502	215

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. Sample in column (2) restricted to women who start a business between rounds. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at mid-line and end-line accounting for multiple outcomes (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.1

Table 7: Intra-household economic empowerment

	(1) Personal inc alone	(2) Personal inc husband	(3) Personal inc joint	(4) Household inc alone	(5) Household inc husband	(6) Household inc joint
Eval x videos	0.102	-0.021	-0.072	-0.044	0.087	-0.063
s.e.	(0.033)***	(0.012)*	(0.030)**	(0.055)	(0.052)	(0.045)
P-value WB s.e.	[0.012]**	[0.136]	[0.056]*	[0.491]	[0.144]	[0.174]
Evaluation	-0.085	0.009	0.065	-0.149	0.079	-0.003
s.e.	(0.025)***	(0.012)	(0.016)***	(0.045)***	(0.038)*	(0.030)
Baseline mean control	0.918	0.017	0.060	0.533	0.148	0.219
End-line diff in means:						
video – control	0.022	0.000	-0.022	-0.019	0.051	0.034
t-test (p-value)	0.525	0.993	0.519	0.104	0.249	0.447
MHT (p-value)	0.774	0.988	0.766	0.391	0.619	0.826
Observations	3,381	3,381	3,381	2,481	2,481	2,481
R-squared	0.014	0.012	0.013	0.167	0.028	0.011
Number of women	1,500	1,500	1,500	1,386	1,386	1,386

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. Sample restricted to women who co-habit at baseline and remain co-habiting for the duration of the study. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at end-line accounting for multiple outcomes and the restriction to the sub-group of cohabiting women (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.

Table 8: Intra-household economic empowerment - supplementary

	(1) Personal inc alone	(2) Personal inc husband	(3) Personal inc joint	(4) Household inc alone	(5) Household inc husband	(6) Household inc joint
Mid-line x videos (1)	0.121	-0.030	-0.078	-0.074	0.113	-0.104
s.e.	(0.038)***	(0.015)*	(0.036)**	(0.060)	(0.071)	(0.068)
P-value WB s.e.	[0.006]***	[0.108]	[0.070]*	[0.288]	[0.134]	[0.178]
End-line x videos (2)	0.082	-0.011	-0.065	-0.011	0.057	-0.015
s.e.	(0.038)**	(0.012)	(0.032)*	(0.057)	(0.068)	(0.049)
P-value WB s.e.	[0.036]**	[0.394]	[0.052]*	[0.861]	[0.442]	[0.779]
Mid-line	-0.095	0.014	0.068	-0.137	0.068	0.014
s.e.	(0.026)***	(0.014)	(0.016)***	(0.046)***	(0.036)*	(0.027)
End-line	-0.064	-0.016	0.075	-0.282	0.042	0.060
s.e.	(0.023)**	(0.009)	(0.020)***	(0.044)***	(0.049)	(0.038)
F-test of (1)=(2)	1.12	1.64	0.15	2.69	0.37	1.27
Mid-line diff in means:						
videos − control	0.094	-0.043	-0.033	-0.082	0.096	-0.025
t-test (p-value)	0.010	0.008	0.333	0.004	0.028	0.559
MHT (p-value)	0.032	0.034	0.510	0.012	0.066	0.546
End-line diff in means:						
videos − control	0.022	0.000	-0.022	-0.019	0.051	0.034
t-test (p-value)	0.525	0.993	0.519	0.104	0.249	0.447
MHT (p-value)	0.774	0.988	0.766	0.391	0.619	0.826
Observations	3,381	3,381	3,381	2,481	2,481	2,481
R-squared	0.015	0.014	0.013	0.169	0.029	0.013
Number of women	1,500	1,500	1,500	1,386	1,386	1,386

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. Sample restricted to women who co-habit at baseline and remain co-habiting for the duration of the study. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at mid-line and end-line accounting for multiple outcomes and the restriction to the sub-group of cohabiting women (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.

Table 9: Health and education

| | (1) | (2) | (3)
% Child
Absent
School | (4)
Child Absent
- School Fees | (5)
Child Absent
- Sick |
	Sick	% Child Sick			
Eval x videos	-0.096	-0.076	-0.164	-0.201	-0.031
s.e.	(0.029)***	(0.025)***	(0.043)***	(0.039)***	(0.037)
P-value WB s.e.	[0.004]***	[0.016]**	[0.004]***	[0.002]***	[0.455]
Evaluation	0.102	0.023	0.039	0.029	-0.040
s.e.	(0.022)***	(0.017)	(0.031)	(0.017)	(0.025)
Baseline mean control	0.270	0.100	0.359	0.298	0.216
End-line diff in means:					
video – control	-0.048	-0.031	-0.012	-0.045	0.010
t-test (p-value)	0.063	0.032	0.693	0.129	0.697
MHT (p-value)	0.541	0.128	0.901	0.286	0.704
Observations	3,967	3,367	2,943	2,981	2,965
R-squared	0.010	0.012	0.029	0.029	0.008
Number of women	1,502	1,375	1,275	1,285	1,285

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. Sample in columns (2) to (5) restricted to women with children. Sample in columns (2) to (5) restricted to women with children. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at end-line accounting for multiple outcomes and the restriction to the sub-group of households with children in columns (2) to (5) (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.1

Table 10: Health and education - supplementary

	(1)	(2)	(3)	(4)	(5)
			% Child	Child Absent -	Child Absent -
	Sick	% Child Sick	Absent School	School Fees	Sick
Mid-line x videos	-0.148	-0.090***	-0.200***	-0.252***	-0.067
s.e.	(0.026)***	(0.023)	(0.052)	(0.039)	(0.040)
P-value WB s.e.	[0.002]***	[0.002]***	[0.006]***	[0.002]***	[0.186]
End-line x videos	-0.035	-0.060*	-0.123**	-0.144**	0.010
s.e.	(0.047)	(0.031)	(0.046)	(0.051)	(0.042)
P-value WB s.e.	[0.473]	[0.082]*	[0.026]**	[0.002]***	[0.811]
Mid-line	0.128***	0.029*	0.056	0.053***	-0.023
s.e.	(0.016)	(0.016)	(0.036)	(0.013)	(0.027)
End-line	0.039	0.019	0.119***	0.002	-0.052*
s.e.	(0.035)	(0.023)	(0.020)	(0.037)	(0.027)
F-test of (1)=(2)	5.88**	2.05	2.37	6.42**	5.07**
Mid-line diff in means:					
videos − control	-0.153	-0.067	-0.101	-0.174	-0.059
t-test (p-value)	0.000	0.000	0.000	0.000	0.010
MHT (p-value)	0.000	0.000	0.000	0.000	0.008
Observations	3,967	3,367	2,943	2,981	2,965
R-squared	0.013	0.013	0.031	0.033	0.010
Number of women	1,502	1,375	1,275	1,285	1,285

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. Sample in columns (2) to (5) restricted to women with children. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at mid-line accounting for multiple outcomes and the restriction to the sub-group of households with children in columns (2) to (5) (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.1

Table 11: Food expenditure, savings and credit

	(1) Food expenditure	(2) Formal saving	(3) Informal savings	(4) Formal credit	(5) Informal credit
Eval x videos	0.103	-0.099	1.359	0.022	0.208
s.e.	(0.133)	(0.465)	(0.583)**	(0.426)	(0.355)
P-value WB s.e.	[0.487]	[0.861]	[0.042]**	[0.941]	[0.523]
Evaluation	-0.263	-1.432	2.648	-1.288	0.842
s.e.	(0.136)*	(0.232)***	(0.539)***	(0.224)***	(0.199)***
Baseline mean control	9.470	2.479	0.770	1.734	0.722
End-line diff in means:					
video – control	-0.209	0.281	1.132	-0.103	-0.161
t-test (p-value)	0.061	0.165	0.000	0.428	0.491
MHT (p-value)	0.596	0.890	0.007	0.990	0.989
Observations	3,942	3,948	3,943	3,944	3,941
R-squared	0.005	0.052	0.235	0.067	0.028
Number of women	1,500	1,501	1,502	1,501	1,500

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. P-values for t-test of parameter significance using wild bootstrapped (WB) standard errors presented in brackets (Cameron et al., 2008). All specifications include women fixed effects and round dummies. MHT presents the p-value from the Multiple Hypothesis Test of the difference in means between treatment and control group at end-line accounting for multiple outcomes (List et al, 2016). *** p<0.01, ** p<0.05, *p<0.1

Appendix A[20]

Video 1: Sarah's story

My name is Sarah Nalwoga. I run my own business. This I have done, and you can do it too. No one cannot do it. With determination, you can do anything that you desire, and enjoy the benefits.

I have been in business for close to two years. Two years at the end of this year. I used to listen to women on the radio who have made it in business. In spite of all sorts of difficulties and conditions identical to my own. About my background: I was staying in Bweyogerere and my husband died from this disease. When he died, I became sick with the disease. I remained with my children. When they started me on treatment, I improved greatly. I realised I could no longer afford Bweyogerere, paying school fees or even buy food and other household items. My businesses are growing passion fruits, a piggery growing oranges and even some crop farming where I grow coco yams on some borrowed land. For fellow women things have changed and everyone must work. Every time you think of looking for hand-outs, you will wait in vain.

For me, when I heard of growing passion fruits on the radio I bought passion fruits I made juice, and took all of the seeds to the seed bed. From the nursery bed I would get my seedlings ready for planting. Yes, I was not familiar with the bed or passion fruit support structure. But I got assistance from someone who had grown passion fruits and I came up with an appropriate structure for my passion fruits. Of course there are difficulties: I have to ensure that I spray the passion fruits and spray the oranges. My pig has to feed well, and get treated whenever sick. I think if I expand my production I can penetrate large markets like Owino, Nakasero. These demand larger quantities like sacks, or 50kgs. Then it is possible to enter Kampala market. Now I am still small, large markets require more quantity of a given product. *When you choose to do something that you like, with your heart and with love nothing can fail you.*

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[20] The videos are available here: video 1; video 2; video 3; video 4.

Video 2: Alice's story

My name is Kyakyo Alice. I run my own businesses. I have done this and you too can do it. I am 42 years old and my husband left me with 5 children. When my husband died I went to Virika for HIV testing where I as found positive. I was sent to Buhinga hospital where I started on HIV drugs. I have consistently used them. I am a business woman, I sell clothes in different markets, I do labour for cash, I grow and sell crops. I keep animals like goats, pigs and cows I can sell these animals for school fees. I also have a retail shop.

The start is always hard. When my husband died, he left me with ailing health. He left me with no money, and I had to find means of survival. I started to prepare pancakes to ensure support for my children. They did not have well off relatives, I had to support them all alone through some baking and labour for cash and now I have taken all my children to school. I have bought land for my children, I have bought goats, cows and pigs for them. I have even built for my children. I decided to work hard to educate my children even when I was not educated myself.

Transportation is one major hindrance to marketing in the area, for instance when I have bananas or beans to sell I have to carry them to the market to get cash. When I started working, life changed for the better. My children are in school, my children can eat, and are not lacking. They have clothes, they are not like orphans, I thank God for this.

I encourage women to take the initiative to work and not just sit and watch. Even if they are widowed like me, they will be able to care for their families and their children.

Video 3: Jovia's story

My name is Jovia Businge, I am 54 years old. What I have done, you too can do it, even better than me. My story started with women's groups, we were taught and encouraged to work hard because being widowed did not mean you were going to die soon after. We were told to be strong and look after our children and not to leave them alone because they would suffer and die. When we moved to this place, my husband died. I tried to do what I could and now I have managed to educate all my children. When my husband died I did not know he was HIV positive, I lived on and our last born is now in senior two. I look after cows, keep pigs, cultivate crops, grow beer bananas and brew local brew to get money. With the money that I got, I started a retail shop at Kicucu and now when I get some money from somewhere else, I add stock into the shop and my children are able to go to school and we also enjoy life. Buyers come to my home for pigs and cows because they know me. I do not have other sources of money. I get it from my projects to survive. I also grow some avocado fruits, I sell sacks at 40,000, 50,000. I also

have eucalyptus trees by the seasonal river. For me, I sell piglets for 50,000. If you buy a female pig within a year, you can make a lot of money. Imagine a pig can produce 9-12 piglets and for 50,000 each piglet, how much is that? With that money, could you fail to take your children to school, buy school uniforms?

Fellow women, I call upon you to work hard. I also started from Zero. I worked hard and cultivated. I buy and rear pigs, I look after chickens because from eggs alone you can buy books for your children. So, fellow women, join women's groups!

Video 4: Mugenyi's story

My name is Yayeri Mugenyi, I am 55 years old. I have managed to start and run a farm, pay school fees for my children. I am telling the rest of you, keep working! You will realize that you too can make it. Do not retreat.

Even when I was still sick I kept telling myself that if God helped me and I became better I had to start up something to make sure that I can take care of my family. Whoever came to see me and gave me money to buy milk, I would keep it and look for someone to dig for me. I would plant sweet potatoes and look after my plantation from which I would get food for my family. I take my yellow bananas to the market every Saturday and my customers for matoke, chicken and trees find me at home. For the trees, I go looking for them. Sometimes I split and collect firewood. I always sell the mature pigs and remain with the piglets. The chickens I never sell at once but keep selling some and replacing them. I am a widow. We never had a house. And myself, I never had the strength to get involved in tilling or to plant anything. I was HIV positive and a patient who could die at anytime. With God's plan I started improving greatly. Regaining my strength bit by bit and I started looking out for something I could do in order to look after my family. The start is always hard, but you just have to be patient as it's never easy. Let's say if you get a chance and you get fifty thousand it's not for buying meat and clothes or meat only. For us, we deal so much in farming, you get laborers, pay them off. They plant for you some sweet potatoes and when they mature you can take them to the market and sell them. You could get a hundred thousand. After investing the fifty thousand, this would give you something else to do. And that's how I started, working with my children. My advice to the people listening to me is that being HIV positive is not the end of the world. If you find yourself positive you can still live long into the future. My humble request to you is to take care of yourself, don't spread HIV to other people, remain with one strain of HIV and get medication. Doctors are available to help you.

Appendix B

Table B1: Poverty Incidence by region, 2015

	Percentage	Number (millions)
National Average	19.70	6.7
Central	4.7	0.4
Western	8.7	0.6
Eastern	24.5	2.5
Northern	43.7	3.1
Urban	9.1	0.7
Rural	27.2	6

Table B2: Balancing tests for attrited sub-sample

A. Demographics	Mean Control	Mean Video	Difference	Stat. Sign.
Age	37.445	34.917	2.528	***
HH size – Nr adults	1.216	1.235	0.018	
HH size - Nr Children	2.108	2.171	0.062	
Widow/Single	0.565	0.514	0.051	
Years diagnosed HIV	2.422	2.060	0.362	
Years on ARV	4.696	4.259	0.437	
No education	0.389	0.309	0.080	

B. Health and Children Education	Mean Control	Mean Video	Difference	Stat. Sign.
Illness	0.276	0.244	0.032	
% children sick	0.079	0.105	0.026	
% children in school	0.915	0.896	0.019	
% children absent school	0.371	0.503	0.132	***
Absence - school fees	0.308	0.368	0.060	
Absence - illness	0.211	0.222	0.011	

C. Income and Livelihoods	Mean Control	Mean Video	Difference	Stat. Sign.
Food expenditure (log)	9.478	9.527	0.048	
Total personal income (log)	9.714	9.207	0.507	**
Other HH income (log)	4.442	4.433	0.009	
Wage – personal (log)	3.956	4.748	0.791	
Crop income – personal (log)	4.401	3.418	0.982	
Livestock income – personal (log)	0.894	0.977	0.083	
Non agricultural income – personal (log)	1.831	1.861	0.030	
Work for wage	0.401	0.460	0.059	
Self-employed	0.233	0.261	0.028	

D. Savings and credit	Mean Control	MeanVideo	Difference	Stat. Sign.
Informal savings – amount (log)	0.888	0.706	0.182	
Formal savings – amount (log)	1.695	1.879	0.184	
Informal credit – amount (log)	0.592	0.603	0.011	
Formal credit – amount (log)	1.100	1.331	0.231	

E. Decision on: *(Cohabitant participants only)*	Mean Control	Mean Video	Difference	Stat. Sign.
Individual income – alone	0.905	0.830	0.075	**
Individual income – husband	0.018	0.028	0.011	
Individual income – joint	0.070	0.120	0.050	
Household income – alone	0.453	0.431	0.022	
Household income – husband	0.175	0.125	0.050	
Household income - joint	0.245	0.262	0.018	

Table B3: Randomization inference

Table 3:	Coefficient	P-value	Adjusted p-value
Self-employed	0.0008	0.3104	1.0000
Work for wage	0.0014	0.0946	0.9966
Total personal income (log)	0.0036	0.5200	1.0000
Other HH income (log)	0.0052	0.6042	1.0000
Wage – personal (log)	-0.0175	0.0356	0.8748
Crop income – persona l(log)	-0.0007	0.9355	1.0000
Livestock income – personal (log)	-0.0040	0.5272	1.0000
Non agricultural income – personal (log)	-0.0003	0.9699	1.0000
Table 4:	**Coefficient**	**P-value**	**Adjusted p-value**
Total personal income – Mid-line	-0.0062	0.3987	1.0000
Total personal income – End -line	-0.0114	0.0304	0.8296
Wage – personal - Mid-line	-0.0121	0.2020	1.0000
Wage – personal - End -line	-0.0022	0.8302	1.0000
Crop income – Mid-line	0.0156	0.1453	0.9999
Crop income – End -line	0.0106	0.3409	1.0000
Livestock income - Mid-line	0.0046	0.5271	1.0000
Livestock income - End -line	0.0043	0.5998	1.0000
Non agricultural income – Mid-line	-0.0016	0.8504	1.0000
Non agricultural income – End-line	0.0055	0.5789	1.0000
Table 5:	**Coefficient**	**P-value**	**Adjusted p-value**
Poultry units	-0.0102	0.4447	1.0000
Cow units	0.0057	0.5910	1.0000
Goat units	-0.0026	0.5927	1.0000
Pig units	-0.0022	0.1893	1.0000
Table 6:	**Coefficient**	**P-value**	**Adjusted p-value**
Retail – Mid-line	0.0011	0.1466	0.9999
Retail – End-line	0.0001	0.9097	1.0000
Retail (conditional) – Mid-line	-0.0043	0.0448	0.9277
Retail (conditional) – End-line	-0.0038	0.1157	0.9991
Table 7:	**Coefficient**	**P-value**	**Adjusted p-value**
Individual income – alone	-0.0003	0.7189	1.0000
Individual income – husband	-0.0002	0.4615	1.0000
Individual income – joint	0.0004	0.5304	1.0000
Household income – alone	-0.0006	0.5822	1.0000
Household income – husband	-0.0010	0.4284	1.0000
Household income - joint	-0.0010	0.3858	1.0000
Table 8:	**Coefficient**	**P-value**	**Adjusted p-value**
Individual income – alone – Mid-line	-0.0005	0.5440	1.0000
Individual income – alone – End-line	-0.0004	0.6238	1.0000
Individual income – husband – Mid-line	0.0002	0.6102	1.0000
Individual income – husband – End -line	0.0002	0.5235	1.0000
Individual income – joint – Mid-line	-0.0011	0.1522	0.9999
Individual income – joint – End -line	-0.0005	0.5149	1.0000
Household income – alone – Mid-line	-0.0012	0.3404	1.0000

	Coefficient	P-value	Adjusted p-value
Household income – alone – End -line	-0.0012	0.3065	1.0000
Household income – husband – Mid-line	-0.0003	0.8550	1.0000
Household income – husband – End -line	0.0012	0.4419	1.0000
Household income – joint – Mid-line	0.0020	0.1722	1.0000
Household income – joint – End -line	0.0027	0.0925	0.9962
Table 9:	**Coefficient**	**P-value**	**Adjusted p-value**
Illness	0.0003	0.7663	1.0000
% children sick	-0.0006	0.2991	1.0000
% children absent school	-0.0010	0.3466	1.0000
Absence - school fees	-0.0013	0.2471	1.0000
Absence - illness	0.0001	0.9435	1.0000
Table 10:	**Coefficient**	**P-value**	**Adjusted p-value**
Illness – mid-line	0.0013	0.2103	1.0000
Illness – end-line	0.0007	0.5318	1.0000
% children sick – mid-line	0.0014	0.0247	0.7616
% children sick – end -line	0.0005	0.4146	1.0000
% children absent school – mid-line	-0.0008	0.5049	1.0000
% children absent school – end -line	-0.0009	0.4846	1.0000
Absence - school fees – mid-line	-0.0013	0.3299	1.0000
Absence - school fees – end -line	-0.0015	0.2548	1.0000
Absence - illness – mid-line	-0.0008	0.4349	1.0000
Absence - illness – end -line	-0.0024	0.0365	0.8813
Table 11:	**Coefficient**	**P-value**	**Adjusted p-value**
Food expenditure (log)	0.0003	0.9166	1.0000
Informal savings – amount (log)	-0.0135	0.1049	0.9983
Formal savings – amount (log)	0.0039	0.6466	1.0000
Informal credit – amount (log)	0.0103	0.1099	0.9987
Formal credit – amount (log)	-0.0012	0.8523	1.0000

Distributions of coefficients for the impact of treatment on each outcome are generated by randomly assigning women to treatment and control groups within regions and estimating each specification 1,000 times. The Table presents the average coefficient value and significance level of t-test of null hypothesis that the coefficient is equal to zero based on this distribution. Standard p-values for the t-tests are presented along with p-values that are adjusted to account for multiple outcomes and the correlation between outcomes as follows $padj = 1 - (1 - p)^g$ where $g = M^{1-r}$ where M is the number of outcomes and r is the correlation between outcomes (see Aker et al., 2011).

Table B4: Standardized effects for continuous outcome variables

	Table 3 (3) Personal Income	Table 3 (4) Household Income	Table 3 (5) Wage Income	Table 3 (6) Crop Income	Table 3 (7) Livestock Income	Table 3 (7) Enterprise Income
Eval x videos	0.568***	0.123	-0.119	0.321**	0.261***	0.225***
s.e.	(0.100)	(0.124)	(0.102)	(0.116)	(0.060)	(0.071)
	Table 4 (1) Personal Income	Table 4 (2) Wage Income	Table 4 (3) Crop Income	Table 4 (4) Livestock Income	Table 4 (5) Enterprise Income	
Mid-line x videos	0.930***	-0.063	0.430***	0.272**	0.292***	
s.e.	(0.125)	(0.132)	(0.123)	(0.096)	(0.082)	
End-line x videos	0.146	-0.185*	0.193	0.248***	0.147*	
s.e.	(0.091)	(0.096)	(0.129)	(0.063)	(0.080)	
	Table 5 (1) Poultry units	Table 5 (2) Cow units	Table 5 (3) Goa units	Table 5 (4) Pig units		
Eval x videos	0.077*	-0.025	0.061	0.266***		
s.e.	(0.043)	(0.078)	(0.067)	(0.071)		
	Table 9 (2) % Child Sick	Table 9 (3) % Child Abs School				
Eval x videos	-0.330***	-0.372***				
s.e.	(0.107)	(0.097)				
	Table 10 (2) % Child Sick	Table 10 (3) % Child Abs School				
Mid-line x videos	-0.389***	-0.452***				
s.e.	(0.101)	(0.118)				
End-line x videos	-0.261*	-0.279**				
s.e.	(0.132)	(0.104)				
	Table 11 (1) Food expenditure	Table 11 (2) Formal saving	Table 11 (3) Informal savings	Table 11 (4) Formal credit	Table 11 (5) Informal credit	
Eval x videos	0.058	-0.026	0.273**	0.007	0.059	
s.e.	(0.075)	(0.120)	(0.117)	(0.143)	(0.100)	

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. Continuous variables are standardized prior to estimating each specification. All specifications are otherwise identical to the specifications in the corresponding tables in the text. *** $p<0.01$, ** $p<0.05$, *$p<0.1$

Table B5: Livestock

	(1) Poultry units	(2) Cow units	(3) Goat units	(4) Pig units
Mid-line x videos	0.311	-0.195	0.080	0.253**
s.e.	(0.415)	(0.533)	(0.203)	(0.087)
End-line x videos	1.017**	-0.046	0.242	0.267***
s.e.	(0.469)	(0.233)	(0.144)	(0.061)
Mid-line	0.511*	-0.005	-0.055	-0.000
s.e.	(0.280)	(0.071)	(0.078)	(0.021)
End-line	0.126	-0.071	-0.006	0.021
s.e.	(0.352)	(0.046)	(0.059)	(0.032)
Observations	3,980	3,980	3,980	3,980
R-squared	0.005	0.000	0.002	0.024
Number of pid	1,502	1,502	1,502	1,502

Robust standard errors (s.e.) clustered at the clinic level presented in parenthesis. All specifications include women fixed effects and round dummies. *** $p<0.01$, ** $p<0.05$, *$p<0.1$