

**Hard Skills or Soft Talk:**  
**Unintended consequences of a vocational training and an inspiration talk on  
childbearing and sexual behavior in vulnerable youth**  
*Preliminary draft*

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**Abstract<sup>2</sup>**

This paper analyses to what extent a hard skills (vocational training) and a soft skills (aspirational pep talk) intervention affected childbearing decisions, HIV testing and transactional sex in young people. Using baseline and follow-up data of a randomized control trial in Malawi, the authors find that receiving an offer to attend a vocational training program decreased the likelihood of childbearing in females and increased the likelihood of being HIV tested in both females and males. The likelihood of being offered transactional sex also decreased in females if receiving a vocational training offer. These outcomes were mainly affected by vocational training, but not by inspirational talks. Comparing the effects of both interventions between adolescents (under 20) and young adults (20-24), we observe that both 'hard and soft skills' reduced childbearing and increased HIV testing in both groups, but they presented significant opposite effects on transactional sex in adolescents. Vocational training reduced the likelihood of having been offered transactional sex, but inspirational talks increased the likelihood of having been offered. Adolescents who received 'hard skills' are less likely to offer transactional sex after the intervention. These results shed light on gender and age differences in the effects of vocational training interventions on non-labor outcomes and on how low-cost 'soft skills' interventions, such as inspirational talks, may affect long term outcomes.

**JEL** : J13, J16, I12, D8

**Keywords:** Early childbearing, HIV/AIDS, risky behavior, randomized control trial, hard skills, low skills, vocational training programs, transactional sex.

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<sup>2</sup> The data used for this analysis was collected as part of a broader research project that studies the effects of vocational training on labor outcomes and drop-out behavior. This project was led by the World Bank's Development Impact Evaluation unit and the primary research paper can be found at <https://openknowledge.worldbank.org/bitstream/handle/10986/15905/WPS6545.pdf?sequence=1>.

## I. Introduction

Over the past decade, vocational training programs have increasingly become a policy priority for governments aiming to give young people access to better employment opportunities. The World Bank and its client governments invested nearly US\$1 billion a year between 2002 and 2012 (Twose, 2015) in these type of interventions. However, there is little rigorous evidence on the effectiveness of such programs in the developing world: evaluations of vocational training programs primarily come from developed countries, and many rely on quasi-experimental designs. Moreover, these evaluations suggest limited effectiveness that translates into moderate effects on labor market outcomes (Heckman et al., 1999; Kluve 2010).

The limited evidence base of experimental evaluations of vocational training programs in developing countries is inconclusive on labor market outcomes. Card et al. (2011) and Ibarra et al. (2014) find no effects of vocational training on employment, but modest effects on earnings in the Dominican Republic. Similarly, Cho et al. (2013) and Hamory et al. (2015) have found that vocational training programs in Malawi and Kenya that emphasize entrepreneurship and self-employment have limited effects on employment opportunities and earnings. In contrast, Attanasio et al. (2011), Attanasio et al. (2015) and Alzúa et al. (2015) find fairly large effects on wages and employment in Latin America. Blattman and Ralston (2015) conclude that these programs have at best modest impacts on labor market outcomes and given their high costs (ranging from US\$1,000 to US\$2,000 per beneficiary), are not cost-effective. The limited effect of these programs is not surprising given the fragility of labor markets in much of the developing world; over 80 percent of the workforce in sub-Saharan Africa is self-employed (Gindling and Newhouse, 2014). There is even less evidence on the gender dimensions of vocational training. Given the additional social and economic challenges faced by women, the economic benefits are likely to be even lower<sup>3</sup>.

Vocational training programs may have impacts beyond the labor market. Providing technical skills increases human capital investment, and therefore may also increase

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<sup>3</sup> Cho et al. (2013) found that women participation in a vocational training program in Malawi was affected by family obligations, their participation was more expensive, and as a result, women benefited less compared to their male counterparts in terms of skill acquisition and short-term labor outcomes.

the opportunity cost of early childbearing and risky sexual behavior – such as unprotected and transactional sex. The demand and supply for transactional sex might be also affected by vocational training programs, though the direction of its impact is unclear: if transactional sex is seen as a source of income, the supply of transactional sex will decrease; if this service is perceived as a normal good and vocational training increases trainees' incomes, the demand for transactional sex will increase after the intervention.

A new generation of vocational training programs is now complementing training in 'hard' (vocational) skills with 'soft skills' components.<sup>4</sup> This new generation aims to increase self-confidence among young people and change their attitudes toward timing for sexual debut, risky sexual behaviors, and childbearing. Soft skills include: personality traits, goals (aspirations), motivation, and subjective beliefs about future choices. There is substantial evidence that personality traits and motivation have economic value in the labor market and in school (Bowles et al., 2001; Gensowski 2012; Heckman and Kautz 2012). Aspirations and aspirations failure have demonstrated impact on attitudes and behavior of poor population toward investment in the future (Ray 2006; Dercon et al., 2012). And now, recent empirical evidence highlights how subjective beliefs about future outcomes affect current and future behavior toward schooling choices (Arcidiacono et al., 2012), sexual behavior (Delavande, 2008 and De Paula et al., 2013), and teenage childbearing (Rascon, 2014), among others.

This paper examines the impact of this new generation of vocational training programs, analyzing a randomized control trial of a vocational training program (hard skills) with an added aspirational pep-talk add-on (soft skills) in Malawi. Using control and treatment data, this study analyses the effect of both treatments on childbearing, sexual health behaviors and psychological wellbeing of vulnerable youth, using Intent-to-treat (ITT) and Treatment-on-Treated (ToT) estimates. The study is part of a broader impact evaluation that studies the combined effects of both interventions on youths' wellbeing and short-term labor outcomes. Details for the evaluation design, interventions, and various data collection instruments can be found in Cho et al. (2013).

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<sup>4</sup> Some examples of this new generation are those lead by the World Bank's Adolescent Girls Initiative.

This paper makes three important contributions to the literature on the effects of hard and soft skills programs on non-labor outcomes. First, the study is one of the first to measure the impacts of a vocational training program on childbearing and sexual health outcomes for both male and female trainees. Previous experimental studies of vocational training in sub-Saharan Africa have focused on labor outcomes (e.g. Hamory et al., 2015) or programs that exclusively target women (e.g. Bandiera et al., 2015 and Novella and Ripani, 2015). In this study, we find differential effects of a vocational training offer by gender and age for early childbearing, HIV testing and transactional sex outcomes. The main effect of soft-skill add-on is mainly observed on adolescent participants for all outcomes. We also find that several psychological well-being indicators, such as confidence and entrepreneur empowerment, may have acted as channels boosting the effects of both interventions.

Second, this is the first evaluation to experimentally study the additive impact of a motivational ‘soft skill’ intervention in the context of a traditional vocational skills training program. Examining both the standard vocational training program and the inspirational talks as separate treatments allow us examine whether direct increases in human capital (hard skills acquired in the vocational training) have greater impacts on long term decisions of childbearing and sexual health than a low-cost behavioral intervention (soft skills acquired through an one-to-one pep talk), and whether these effects vary for males and females and for adolescent (under 20) and young adults. To the best of our knowledge, this is the first study that experimentally studies the effects of a soft-skills add-on in a vocational training program within a low-income country context.

Third, we contribute to the literature on the cost-effectiveness of vocational training program by studying a very minimalist soft skill intervention. Implementing the aspirational talk cost \$17.20 per person. This is less than 2% of the cost per person of the full vocational skills training intervention. Assessing whether such low-cost interventions can impact the outcomes of interest is critical to understanding how to make vocational training programs more cost-effective.

The structure of the paper is as follows: Section II briefly describes the context of vulnerable youth in Malawi and discusses some of the causes of early childbearing and risky sexual behavior. Section III describes the vocational training and the aspirational talk add-on. Section IV discusses the research questions, the experimental design, and the data. Section V presents the main findings on primary outcomes (i.e. childbearing and sexual health) and the mechanisms of psychological wellbeing through which the interventions could have affected the primary outcomes. The last section concludes and discusses policy implications.

## **II. Background**

### **II.I Childbearing, HIV testing and transactional sex in sub-Saharan Africa**

According to the UNFPA (2013), in sub-Saharan Africa, approximately 10.2 million women ages 20-24 had their first live birth before age 18. All of the 23 countries reporting over 100 births per 1,000 adolescent girls are in sub-Saharan Africa and Malawi is positioned in the 7th highest adolescent birth rate in the world (World Bank 2014). According to the UNFPA, these rates have not changed much since the 1990s (UNFPA 2012). Early marriage can be an important determinant for early childbearing and HIV infection (Clark et. al, 2006). The percentage of adolescent marriage in Malawi is 50 percent (UNFPA 2013) and in sub-Saharan Africa as a whole, more than a third of female adolescents gets married before their 18th birthday.

Teenage pregnancies in Malawi are particularly high for uneducated and poor youth. Forty-five percent of teenagers with no education have already begun childbearing as compared with only 4 percent of those with more than secondary education. Teenagers in the lowest wealth quintile are twice as likely to have started childbearing as those in the highest wealth quintile (31 and 16 percent, respectively).

The new generation of vocational training programs has the potential to reduce risky sexual behavior by increasing income and improving self-confidence. Extensive research links poverty with transactional sex in sub-Saharan Africa (Hunter 2002; Nkosana and Rosenthal 2008). Vulnerable young women engaging in transactional sex with older men are at a greater risk of contracting HIV as older men are more likely to

be infected.<sup>5</sup> Negotiating condom use and safe sex is more difficult when the age and income differences are large – the bargaining power of young women is limited when large differences exist.<sup>6</sup> Securing and stabilizing incomes of vulnerable youth could decrease risky sexual behaviors; however, the empirical evidence supporting this claim is quite limited. Recent studies show that providing small amounts of cash reduced transactional sex and new infections of sexually transmitted infections among school-age girls in Malawi (Baird et al., 2012). And raising returns to schooling lowered childbearing rates in the long term for girls that had dropped out of school prior to receiving the cash transfers (Baird et al., 2015).

With regards to HIV/AIDS, of the 25 million of people who live with the virus worldwide, 71 percent live in Sub-Saharan Africa. While the number of new infections has steadily decreased in the region during the last decade, every year 1.5 million new infections occur (UNAIDS 2013). New infections are mainly concentrated in young population, especially among females.

The HIV and sexual health indicators of Malawi's vulnerable youth are among the worst in the world. Malawi has the tenth highest HIV prevalence in the world, with 10.2 percent of adults being infected today (Global Health Observatory 2015). According to the 2011 Malawi Demographic and Health Survey (MDHS), HIV prevalence rates for 15-24 year old women are more than twice higher than the rates of their male counterparts (5 and 2 percent respectively), with infection rates rapidly growing in this period.<sup>7</sup>

The Malawian labor market offers very few non-agricultural paid jobs, limiting opportunities for youth<sup>8</sup>. Wages in the agriculture sector are not stable across the year, and over half of agricultural workers are not paid (compared to only one-fifth of non-agricultural workers). Although rural areas have more employment opportunities than

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<sup>5</sup> While estimating the number of women that engage in transactional sex is very difficult, several studies report this practice is not uncommon among vulnerable adolescents in Sub-Saharan Africa (Luke and Kurtz 2002, Luke 2003).

<sup>6</sup> Robinson and Yeh (2011) provide evidence of the effects of income shocks for the case of female sex workers. Their study finds that an income shock or a sick family member increased the likelihood that female sex workers in western Kenya engaged in unprotected sex, which was better paid than protected sex.

<sup>7</sup> HIV prevalence practically double for young women every two years of age, increasing from 3 percent among women age 15-17 to 6 percent for women age 18-22, to 8 percent for women age 23-24. Prevalence rates for young men grow at a slower pace, reaching 5 percent by the age 23-24.

<sup>8</sup> According to the 2013 Malawi Labour Force Survey (MLFS, 2013), two thirds of employed persons work in the agriculture sector and vulnerable workers, those classified as account workers and contributing family members, represent 60 percent of the country's employment.

urban areas (due to mainly subsistence agriculture), access to education is more limited. This prevents vulnerable youth from acquiring the skills demanded in the better-paid non-agricultural sector. The returns to education are significant: median monthly gross income is nearly twelve times higher for people with tertiary education than those with no education (MDHS 2010).

Hard skills increase human capital investment of participants, and therefore these are likely to increase the opportunity cost of early childbearing and HIV-infections. Thus, we would expect a decline in early childbearing and an increase in HIV testing. This investment will also increase the wages of participants and therefore, the demand for transactional sex may increase (if it is a normal good) and its supply may decrease (if it is used as a source of income).

## **II.2 Soft skills in vocational training programs**

Despite the increased use of soft skills components in vocational training, there is limited empirical research on their effectiveness. Research from developed economies suggests that soft-skills are associated with success in many realms of life, including schooling performance, labor market achievements, health status and good citizenship (Bowles et al., 2001; Gensowski 2012; Heckman et al., 2006; Heckman and Kautz 2012).<sup>9</sup> The existing experimental evidence in sub-Saharan African countries (e.g. Bandiera et al., 2012, Cho et al., 2013) studies the combined effect of both hard skills (vocational training) and soft skills components (e.g. life skills, information about the benefits of delaying marriage and childbearing), which prevents experimentally disentangling the impacts of each component (and therefore the mechanisms through which programs work) on labor and non-labor outcomes, such as life outlook, psychological wellbeing and sexual and reproductive health. In Uganda, Bandiera et al. (2012) evaluate a program, which targeted adolescent women, that combined vocational training with information on sex, reproduction and marriage. The combined intervention increased consumption, reduced teenage pregnancies, and increased the

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<sup>9</sup> In an experimental evaluation of an early childhood program for African American children, Heckman et al. (2012) found that while the intervention did not improve IQ, it substantially improved externalizing behaviors and academic motivation. These in turn reduced criminal activities and improved a number of labor market and health outcomes in the long term.

expected age for marriage and childbearing. The World Bank EPAG study (2015) examined a six-month comprehensive vocational training program that included life skills and microcredit for Liberian female teenagers. In contrast to Bandiera et al. (2012), they find that the intervention increased economic and non-cognitive outcomes, but did not reduce young women's sexual behaviors nor their desired or actual fertility.

Groh et al. (2012) is the first study that experimentally analyzes a soft skills component in a developing country (Jordan), as part of a program that aimed at assisting female community college graduates find employment.<sup>10</sup> The soft skills component, which lasted for 45 hours and was business-oriented in nature, taught graduates teamwork skills, how to interact with customers and how to act professionally at work and in job interviews. Although the soft skills program had small effects on employment outside the capital, it led to improvements in life outlook and a reduction in depression.

The divergent findings of existing studies illuminate the complex relationship that exists between economic stability and risky sex. Greater opportunities for income earning may increase the demand for partners; or result in more mobility and urbanization, both of which are associated with HIV infection. (Glick P 2007; Beegle and de Walque 2009). Several Demographic Health Surveys in Sub-Saharan Africa (SSA) show that there is an inverse relationship between wealth and HIV prevalence rates in many SSA countries, including Malawi (MDHS 2010). More research is needed on how best to change youth's attitudes about their life outlook and long-term decision-making regarding childbearing and sexual health.

Soft skills may change youth's well-being and their perception about themselves. If childbearing is a 'nothing to lose' choice, soft skills may decrease childbearing and may increase HIV testing. However, the expected effect on transactional sex is ambiguous. While soft skills may decrease transactional sex if it is perceived as a denigrating or immoral activity, these skills may also increase transaction of gifts/money for sex if it is

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<sup>10</sup> Blattman, Jamison, and Sheridan (2015) provide evidence for a different target group, criminally-engaged Liberian men. The intervention, which lasted eight weeks and taught self-control skills and a noncriminal self-image, reduced criminal activity.

perceived as a route for proving masculinity, for showing the level of emotional involvement with a partner and/or for expressing empowerment.

### **III. The Interventions**

In 2009, the Government of Malawi decided to pilot a new apprenticeship program targeted to vulnerable young people between the ages of 14-24 (particularly youth affected by HIV/AIDS) to increase employability, promote productive self-employment and reduce vulnerability to risky sexual behavior. The Technical Education and Vocational Education and Training Authority (TEVETA) implemented the program across all 28 districts of Malawi. The geographic scope allows us to evaluate the program based on a nationally representative sample of vulnerable youth, in both urban and rural settings. Details for the evaluation design, interventions, and various data collection instruments can be found in Cho et al. (2013).

Participants were identified through a community-based selection process, which was validated during the baseline data collection. The baseline data shows that more than a third are orphans of both parents, over 60 percent lived in a dwelling that had a grass roof (a proxy measure for poverty), and over 80 percent reported living in a household where adults skip a meal “often” or “sometimes” due to lack of money. The participants were about 21 years old on average and around two-thirds were male. Only 10 percent of the participants were still attending school. The baseline data also revealed clear gender differences before the training program began. Women lived in households with fewer adults and more dependent children, had lower completion rates of secondary education, had lower personal income, and spent more time on domestic chores and agriculture as opposed to paid labor or business activities<sup>11</sup>.

Most study participants had been sexually active prior to the program, often engaging in risky sex. The baseline survey reveals that 72 percent of respondents had sex before, 16 percent were married or living with a partner prior to the interventions, and the

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<sup>11</sup> When compared to a nationally representative sample of Malawian youth aged 15-24 (MDHS 2010), youth in our sample were more likely to live in a house with a grass roof, more than three times as likely to be an orphan, and less likely to still be in school.

average sexual debut occurred at age 17. Four in ten were sexually active during the 12 months preceding the interview, and the average number of partners was 1.1, when excluding sex workers. Among the sexually active, 31 percent had at least one partner who was older or younger by at least five years. Six in ten reported not using condoms in their last sexual encounter, even though 89 percent reported having access to condoms. Seven in ten respondents have tested for HIV before, and among those, around 50 percent were tested within the last year.<sup>12</sup>

The studied intervention had two experimental components:

- (i) 'Hard' skills to enable youth acquire the technical and business skills to either find paid employment or start their own businesses. The program was comprehensive, consisting of vocational training in a trade, mentorship with experienced trainers, HIV/AIDS life skills and entrepreneurship courses, and a start-up kit of tools for the occupation of choice.<sup>13</sup> The follow-up survey shows that trainees attended training for an average of three months (as designed), and about half of trainees (and more than 80% of trainers) attended every training session. Nearly 70% of trainees reported that practice tools were always available, and most of the trainees felt encouraged by the trainers. We expect this arm of the intervention may influence early childbearing and sexual risky behavior by increasing human capital investment of vulnerable young people and therefore, increasing the opportunity cost of early childbearing and risky behavior. As discussed in the previous section, if this investment increases the wages of vocational training

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<sup>12</sup> Interestingly, the reasons for using condoms are slightly different for men and women. While the majority of men stated using condoms as a way of preventing unwanted pregnancies (64 percent versus 47 percent of women), the majority of women use condoms to prevent sexually transmitted infections (66 percent versus 36 percent of men).

<sup>13</sup> TEVETA identified a pool of potential trainers in each district based on their expertise and business performance in the neighborhood. Trainers were compensated by TEVETA and also benefited from the free labor that the apprenticeship program provided. In the 23 districts where our baseline survey took place, there were 164 trainers that offered 17 different trades. TEVETA created a set of training modules customized for each of the principal trades. During the apprenticeship, each trainer trained between 1 and 17 trainees at their workshops. Because many of the trainees lived in rural areas and workshops were mainly in urban areas, trainees were provided by TEVETA a small stipend to cover meals and accommodations.

<sup>13</sup> The inspirational talks were implemented by local consultants with experience working with at-risk youth, who were hired and supervised by the research team. The inspirational talks were conducted one-on-one, with only the student and the consultant present.

participants, the demand for transactional sex may increase and its supply may decrease.

- (ii) 'Soft' skills component to build confidence and self-esteem, sooth fears and reinforce motivation. This component was added by the research team and took the form of a 20-minute aspirational pep talk. Half of the first cohort of trainees participating in the trainings was randomly selected for this second intervention. The objective of the talk was to provide participants with a positive view of their achievements and the likelihood of future success in their field of training. The training of trainers emphasized that the pep talks should be as similar as possible across respondents, and that they should only be motivational, not conveying any form of information (e.g. sector wages) or skills specific to the occupation. The consultants followed a script for the pep talk, which is included as Annex I.<sup>14</sup> We expect this arm of the intervention may influence youth's well-being and their perception about themselves by improving participants' outlook about their choices and as a result, it may increase their perceived opportunity costs of early childbearing and sexually risky behavior. However, soft skills may increase or decrease transactional sex depending on how this activity is perceived and used by suppliers and consumers of transactional sex.

The 'soft skills' component had several differences with respect to the 'soft skill' intervention studied by Groh et al. (2012), which as noted above is the first study to experimentally study a soft skill program in the context of labor market initiatives targeting youth in a developing country. Our intervention was conducted in a low-income country (Malawi's GDP per capita in 2014 was US\$272, two percent of the world's average) and targeted a more vulnerable group; the intervention was much less

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<sup>14</sup> The inspirational talks were implemented by local consultants with experience working with at-risk youth, who were hired and supervised by the research team. The inspirational talks were conducted one-on-one, with only the student and the consultant present.

intensive (20 minutes versus 45 hours, allowing to measure a minimum threshold for these types of interventions) and its content was aspirational and did not provide business 'soft' skills.

The simplicity of the aspirational pep talk allows us to measure the effect that a specific type of soft skill (i.e. motivation and aspirations) has on childbearing and sexual health decision-making through psychological channels. This contrast with most studies of the nascent literature of 'soft skills', which either provide information (Jensen 2010; Avitable and de Hoyos 2015) or complex interventions that aim to teach and affect different types of soft skills, making it very difficult to understand which 'soft skills' can be taught and how these actually affect decision-making. The psychology literature distinguishes five big domains of soft skills or personality factors: conscientiousness, openness to experience, extraversion, agreeableness and neuroticism/emotional stability (see Heckman and Kautz, 2012). Our intervention fits best 'extraversion' because it aims to build self-confidence and enthusiasm toward the world. The aspirational nature of our interventions makes it more in line with motivational interventions such as film documentaries of successful entrepreneurs that led Ethiopian farmers to invest more in their children schooling (Bernard et al., 2014).

In Malawi, over a third of school-aged girls suffer from psychological distress (Baird et al., 2013), which highlights the potential importance of a simple aspirational intervention.

## **IV Research Questions, Data and Evaluation Design**

### **IV.1 Research questions**

This study has the following primary and secondary research questions:

Primary Questions:

- 1- What is the impact of the vocational training ('hard skills' intervention) on childbearing and sexual outcomes?

- 2- What is the additional impact of aspirational pep talks ('soft skills' intervention) when added to the vocational training on the same outcomes?

Secondary Questions:

- 3- What is the differential effect of the two interventions on childbearing and sexual outcomes on male and female trainees?
- 4- What is the differential effect of the two interventions on the same outcomes on adolescent (under 20) and young adult trainees?
- 5- Through which psychological mechanisms do both interventions work in affecting childbearing and sexual outcomes, such as confidence and entrepreneurial skills?

## **IV.2 Data and Outcomes**

Data for this study corresponds to baseline and follow-up surveys (1,122 individuals and 1,018). Several administrative issues reduced our sample to 1,018 observations of which 690 were randomly assigned to treatment (first and second cohort of phase-in design) and 328 to control (last cohort that got the intervention). Out of the 1,018 participants, around 25 percent dropout vocational training or did not start the training. As a result, our ITT estimates are based on approximately 994 observations. This study analyzes the effect of both intervention arms after four months of completion of the vocational training (in average). The main outcomes of interest are based on recall questions related to the last sexual partner (or sexual encounter) including: childbearing HIV testing and engaging in transactional sex. To study the mechanisms through which the interventions could have affected the primary outcomes, we analyzed the effect of both interventions on psychological wellbeing and soft skills outcomes such as confidence, happiness and entrepreneurial aspirations.<sup>15</sup>

### **Balance at baseline**

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<sup>15</sup> All vocational trainers were asked about their experience and their perception of each of the trainees' skills, diligence, effort, attendance and so on.

In Tables 1A and 1B we present a comparison of baseline variables for both randomly assigned control and treatment participants. These tables show that there are no significant differences between control and treatment in socio-demographic, assets, labor experience and attitudes. Regarding childbearing, sexual experience, STDs and HIV testing, we observe a small but significant difference in *first time had sex and used condom*. We believe this is not a major concern given that the rest of sexually-related variables are not significantly different between treatment and control.

In addition, Graphics 1A and 1B present the difference between dropouts of the vocational training and the rest of participants. We observe that in the majority of socio-demographic characteristics at baseline there are no significant differences between those that decided to stop attending the training and the rest of participants. However, there are significant differences in childbearing and civil status. Dropouts are more likely to be divorced and married and are more likely to have living children. This reveals that dropouts may have been more vulnerable population than the rest of the treatment group. Thus, the ITT estimate may reflect a lower bound of the effect of both interventions.

### **IV.3 Evaluation Design**

The evaluation of the vocational training followed a phase-in design, where participants were randomly assigned to two cohorts: the treatment started the program immediately after the baseline survey and the control started the program within a year, but prior to the collection of the follow-up survey<sup>16</sup>. Due to administrative errors, our follow-up found that over a fifth of the individuals assigned to the treatment group did not receive the invitation. For our main analysis, we report intent-to-treat (ITT) and treated-on-treated (ToT) estimates and discuss the effects of both: a) treatment measured as *received invitation to attend the vocational training* and b) treatment measured as receiving inspirational talk. All trainees who were selected for the inspirational talk received it.

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<sup>16</sup> A substantial implementation delay of the first cohort group limited the time of our study effects, from 18 months to 4 months.

To allocate participants to the inspirational pep talks, half of the treatment group was randomly assigned to receive these add-ons while the other half did not. The pep talks took place in the middle of the overall apprenticeship program, approximately two months after the first cohort started receiving the training. Because the length of each trade varied between one and five months, we restrict our analysis to program impacts for trades that lasted at least one month. Due to high attrition rates, our main analysis is restricted to the follow-up survey similar to Cho et al. (2013).<sup>17</sup>

The baseline survey was collected in March-April 2010, the treatment group began activities in October 2010-April 2011, pep talks took place in January-April 2011, and the follow-up surveys were collected in June-July 2011. Figure 1 describes the evaluation design in a diagram.

## V. Estimation Strategy and Results

### V.1 Estimation Strategy

To estimate intention-to-treat effects of the intervention for each treatment arm on childbearing, HIV testing and transactional sex we use linear probability models. We firstly present the effects of ‘hard skills’ considering the following equation:

$$Y_{t+1,ij} = \alpha + \beta D_{ij}^{VCT} + X_{ij}\gamma + v_{1j} + \eta_{1ij} \quad (1)$$

$Y_{t+1,ij}$  represents any of our outcomes of interests (i.e., childbearing, HIV testing or transactional sex) for individual  $i$  living in district  $j$  collected in the follow-up survey ( $t+1$ ),  $D_{ij}^{VCT}$  is a binary indicator for receiving an invitation to participate in the vocational training program without inspirational talk (VCT).  $X_{ij}$  is a set of socio-demographic

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<sup>17</sup> TEVETA worked with local authorities to create a list of youth eligible for the TVST program. Eligible beneficiaries included orphaned, vulnerable and AIDS-affected youth between the ages of 14 – 30, not currently enrolled in school. The list was not verified before the baseline survey, and at baseline, 8.5% were found to be ineligible (typically either due to age or current enrollment in school), and 14.8% were not possible to identify (duplicate listings and placeholder names). TEVETA then worked with local authorities to identify eligible replacements. The randomization for the pep talk uses a different sample than the cohort randomization. The initial randomization was done from the full sample of intended participants. The pep-talk randomization applied only to the subset of the treatment group who actually participated, and were in attendance at a training center at the time of the pep talks (this left out a few of the earliest participants in the central region, where there was an earlier wave than in other regions).

characteristics collected in the baseline survey and  $\eta_{1ij}$  is the error component for each individual  $i$  living in district  $j$ . The standard errors of the error terms are clustered at the master craftsperson level to account for the experimental design of this intervention.

The baseline characteristics consider in  $X_i$  are: age, age squared, orphan of both parents, head of household, primary language is Chichewa, literate in English, left school 5 or more years ago, occupation dummies and district dummies. Occupation dummies have been included to control for the sorting of individuals to occupations with different returns and future employment alternatives. District dummies control for unobserved district-level variables, as well as for the differences among districts in starting dates for the treatment.

To analyze the impact of both intervention arms, we use a similar structure to equation (1), but we add an additional dummy  $D_{ij}^{VCT+PT}$  to identify those participants who received the inspirational pep talk:

$$Y_{t+1,ij} = \beta_0 + \beta_1 D_{ij}^{VCT} + \beta_2 D_{ij}^{VCT+PT} + X_{ij}\lambda + v_{2j} + \eta_{2ij} \quad (2)$$

Because the pep talk add-on was allocated to those participants who were already in the vocational training program, we also present treatment-on-treated (ToT) estimates of our outcomes using as an instrumental variable the original assignment of the vocational training program. Our empirical specifications for all outcomes consider the following equation:

$$Y_{t+1,ij} = \phi_0 + \phi_1 P_{ij}^{VCT} + \phi_2 D_{ij}^{VCT+PT} + X_{ij}\delta + v_{3j} + \eta_{3ij} \quad (3)$$

Where the participation to the vocational training program  $P_{ij}^{VCT}$  is instrumented with the random assignment of receiving an invitation to attend the program:

$$P_{ij} = \delta_0 + \delta_1 D_{ij}^{VCT} + X_{ij}\theta + v_{4j} + \zeta_{ij} \quad (4)$$

## V.2 Results

This section discusses ITT (Intention-to-treat) and ToT (treatment-on-treated) estimates of early childbearing, HIV testing and transactional sex. We firstly analyse the ‘hard

skills' arm of the intervention, and subsequently we include the 'soft skills' arm. Our main outcomes are based on the follow-up data collected in June-July 2011. Childbearing outcomes are based on measures of having biological children in the last 6 months and in the last 12 months. HIV testing outcomes have been constructed using self-reported measures about being tested in the last 6 months and in the last 12 months. Transactional sex outcomes are based on measures of ever being offered gifts or money for sex and of ever having offered gifts or money for sex. All tables are presented for females and males separately.

### **V.2.1 ITT Estimates for Childbearing and Sexual Health Outcomes**

Tables 2A- 2C show ITT estimates of the 'hard skills' arm for childbearing, HIV testing and transactional sex models, respectively. Our effects are expressed in marginal effects of linear probability models.<sup>18</sup> Means and standard deviations of control group collected in the follow-up survey are reported at the bottom of these tables.

Table 2A shows in Columns (1) and (2) marginal effects for the female sample and in Columns (3) and (4) for the male sample. We observe that the intervention of vocational training without the inspiration talk add-on reduces the probability of having a child in the last 6 and 12 months for females, but not for males. The likelihood of becoming a parent in the last 6 and 12 months decreases in 4.2 and in 7.0 percentage points, respectively, if receiving an invitation to attend the vocational training program. Relative to the control group, both effects correspond to a decrease of 50 and 40 percent in early childbearing, respectively.

We now turn to the analysis of HIV testing. Tables 2B present ITT estimates based on linear probability models. As mentioned earlier, our measures of HIV testing correspond to recall questions about ever being tested in the last 6 and 12 months prior to the follow-up survey.

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<sup>18</sup>Although our dependent variables are expressed as dichotomous variables, probit and OLS models present similar results for all outcomes of interest. In contrast to probit models, OLS models allow us to compare empirical specifications with slightly different number of observations among the three sets of outcomes.

In Table 2B, ITT estimates show that receiving an invitation to attend the vocational training affects the probability of being tested for both females and males. For females, receiving an offer increased the probability of being HIV tested in the 6 and 12 months in 11.4 (31 percent) and 8.5 (14 percent) percentage points. Similarly, the intervention increased in 9.2 (28 percent) and 7.4 (15 percent) percentage points the probability of being HIV tested for males.

Regarding transactional sex, Table 2C shows significant effects of receiving an invitation to attend the training only for females. Females receiving the invitation were 5.5 percentage points less likely to be offered gifts or money in exchange for sex.

In overall, the ‘hard skills’ arm of the intervention reduced early childbearing for females, increased HIV testing for both females and males, and decrease the supply of transactional sex for females.

Now we turn to the analysis of both arms of the intervention identifying those participants who received the inspirational pep talk. Tables 3A-3C present the results for our three main outcomes. We observe that the inspirational pep talk add-on does not have any significant effect for childbearing and HIV testing. However, we observe a reduction in transactional sex offered by females when receiving the inspirational talk in addition to the vocational training.

### **V.2.2 ITT Estimates for Hard and Soft Skills for Adolescent Population**

Tables 4A-4C present ITT estimates for our main outcomes of interest using the sample of adolescent population (between 14 to 19 years old). Our main hypothesis is that adolescents might be more vulnerable to inspirational interventions than young adults given that they are still in the transition of shaping their personality traits. Table 4A shows the effect of both intervention arms. We find the vocational training with inspirational talks is more effective for adolescent population than the vocational training alone. Indeed, childbearing in the last 6 and 12 months decreased in 9.5 and 14.6 percentage points. Girls receiving both vocational training and inspirational talks are approximately 3 times less likely to become mothers than girls in the control group.

In Table 4B, we also observe that ‘hard skills’ increased HIV testing in the last 6 months in 11.1 (38 percent) percentage points and ‘soft skills’ increased it in the last 12 months in 26.4 (70 percent) percentage points.

Finally, Table 4C shows the ITT estimates for transactional sex. We have found that adolescents who received the invitation to attend the vocational training are 6.2 percentage points less likely to be offered transactional sex. This corresponds a decrease of 50 percent in comparison to the control group. Soft skills do not have a significant effect on transactional sex for adolescent people.

### **V.2.3 TOT Effects for Childbearing and Sexual Health Outcomes for Adolescent Population**

This section presents the ToT (treatment-on-treatment) effects instrumenting the participation to the vocational training program with the original random assignment for receiving the invitation. Table 5 presents a summary of our results using recall questions of childbearing and HIV testing in the last 12 months, and of transactional sex as ever been offered or ever have offered money or gifts in exchange for sex.

We find that adolescents are more responsive to the intervention when inspirational talks are considered as part of the vocational training program for all outcomes. In addition, those participants attending the vocational training were more likely to be HIV tested than the control group and the effect was larger for those who received an inspirational talk in addition to the ‘hard skill’ training.

Table 5 also shows that adolescents who attended the vocational training were less likely to be offered transactional sex (to supply this service) than the control group, but more likely to be offered transactional sex if attended the training and obtained inspiration talk. This confirms the opposite effect that this type of interventions may have on transactional sex. While ‘hard skills’ may decrease the supply of transactional sex by increasing the labor market opportunities to participants, ‘soft skill’ may increase the supply of this service if these increase the empowerment and self-esteem of participants. Future behavioral add-ons for vocational training programs should consider

increasing self-esteem, motivation and empowerment through inspirational talks focused on personal development instead of only professional progress.

These results reinforce the finding that inspirational talk add-ons may be an extremely cost-effective intervention to encourage preventive health and to increase awareness about sexually risky behavior primarily in vulnerable adolescent populations.

### **V.2.3 Effects on Mechanisms of Psychological Wellbeing**

In this section, we briefly analyze the mechanisms through which our outcomes may have been affected during both interventions. As mentioned before, the increase of human capital investment (hard skills through vocational training) should decrease childbearing. In particular, it is not surprising to see that the effect of vocational training is mainly observed in females, but not in males. During and after the intervention, females increased their technical skills and as a result, their opportunities in the labor market. Thus, the opportunity cost of having a child increases and females may decide to deter the decision of having a child.

The effect of vocational training may also have an effect on HIV testing through the increase in opportunity cost. Males and females may feel with more value-added in their communities and personal life and therefore, may tend to take care more of themselves. Similarly, if transactional sex is used as a mean for obtaining financial resources instead of a mean for demonstrating love and caring, increasing human capital investment may decrease transactional sex.

Inspirational talks may have also influenced the way that young people perceive themselves relative to others, as well as their confidence on personal and professional matters. In Table 5 we analyze a set of indicators of happiness, empowerment, confidence and aspirations exploring gender differences. We observe that inspirational talks had a significant effect on some of these measures. For instance, those receiving the inspiration add-on are more likely to have higher entrepreneurship aspirations (column 8 and 20) and to report that they feel happy and satisfied with life (column 14). The vocational training (without the pep talk) had also impact on the same outcomes, as well as on feeling empowered to get a loan (column 12), life improvement in the past

year (column 16) and feelings about being able to earn money outside farming (column 20). These effects are mainly observed for males, but not for females. Females receiving the offer to the vocational training are less likely to report inability to perform as well as others (column 4) than males. However, the inspirational talk did not change the confidence of obtaining financial resources in females. This is consistent with the primary paper's finding of the harsher financial reality faced by women (Cho et al., 2013), which found that women were more likely to use their savings during the training and were less likely to receive help from the master craftsmen than men.

Our results highlight that childbearing, HIV testing and transactional sex have changed as a result of the hard and soft components of the interventions. In particular, we have found that childbearing and HIV testing are more responsive to hard skill interventions whereas adolescents are responsive to both hard and soft skill interventions.

## **VI. Conclusion**

Our results provide evidence that vocational training programs can have important impacts on non-labor outcomes. While the intervention had moderate effects on short term labor outcomes (Cho et al., 2013), the announcement of becoming a recipient of vocational training reduced childbearing for females in the last year by 40 percent in comparison to the control group. Such reduction in fertility is likely to have important development impacts in the long term for vulnerable youth. Additionally, the vocational training without peptalk increased HIV testing in the last 6 months by 30 percent and in the last year by 15 percent in comparison to the control group for both males and females. And been offered transactional sex to females decreased in 42 percent in comparison to the control group.

The inspirational talk add-on did not have a significant effect on young adult population (between 20 to 24 years old), but it had a large and significant effect for adolescents (between 14 to 19 years old) in all outcomes considered in this study (i.e., childbearing, HIV testing and transactional sex). Indeed, receiving an invitation to attend a vocational training program complemented by an inspirational talk was more effective for reducing

adolescent childbearing than just receiving the invitation. And for HIV testing and transactional sex, both intervention arms have an effect. For HIV testing, both arms increased the probability of being HIV tested and for transactional sex, the 'hard skill' arm decreased the supply of transactional sex, but the 'soft skill' arm increased it as well. This proves that this add-on might be a very cost-effective intervention to decrease childbearing and to reduce risky sexual behavior in adolescents.

Programs targeting economic empowerment aimed at reducing transactional sex need to consider in parallel the benefits of improving confidence and self-esteem. Despite the brevity of the inspirational talks, we observe they had an effect on childbearing, HIV testing and transactional sex in adolescent population after four-six months of their implementation. Most interestingly, the pep talks had dramatic impacts on psychological wellbeing, mainly in males, beyond those accrued through the vocational training or any economic gains (like those shown by Baird et al. (2013), who found that psychological wellbeing indicators improved when participants received cash transfers but gains dissipated after cash transfers stopped). A simple inspirational pep talk increased entrepreneurship aspirations and feelings of professional empowerment in males; whereas it increased the confidence and positive self-perception in females fourth-six months later. Improvements in psychological wellbeing could in turn explain short term impacts on HIV testing and transactional sex, consistent with previous research linking psychological wellbeing and sexual health (Agardh et al., 2010).

One policy appeal of scaling up effective 'soft skills' components is their low cost. The pep talk lasted for 20 minutes and their cost per beneficiary was under US\$15. In contrast, the vocational training lasted an average of three months and the cost per beneficiary was over US\$1,000. Given the high cost and the limited impacts on labor outcomes, other development interventions may be better suited for addressing the problems faced by vulnerable youth. We provide evidence that low-cost interventions that motivate and change youth's aspirations and life outlook, a type of soft skill, can be one such intervention.

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**Table 1A. Socio-Demographic and Assets Characteristics**  
Differences between Control and Treatment at baseline

Variables	Mean		Difference	St. Error	P-Value
	Control	Treatment			
<b>Socio-Demographics</b>					
Age	21.44	21.58	-0.15	0.20	0.47
Gender (male=1)	0.66	0.68	-0.02	0.03	0.47
Orphan of both parents =1	0.42	0.44	-0.02	0.03	0.53
Household head =1	0.18	0.17	0.01	0.02	0.64
Chichewa is primary language =1	0.69	0.62	0.07	0.03	0.03
Literate in english =1	0.70	0.77	-0.07	0.03	0.02
Left school 5+ years ago =1	0.31	0.34	-0.02	0.03	0.44
Current a student =1	0.10	0.11	-0.01	0.02	0.70
Household size	5.48	5.33	0.15	0.15	0.34
Has received vocational training =1	0.13	0.14	-0.01	0.02	0.56
Ethnic group: Chewa =1	0.27	0.24	0.03	0.03	0.24
Ethnic group: Tumbuka =1	0.15	0.17	-0.02	0.02	0.43
Ethnic group: Lomwe =1	0.17	0.17	0.00	0.02	0.99
Ethnic group: Ngoni =1	0.17	0.17	0.00	0.02	0.92
Ethnic group: Other	0.24	0.26	-0.02	0.03	0.57
Schooling: Less than primary =1	0.25	0.21	0.04	0.03	0.12
Schooling: Completed primary =1	0.53	0.53	0.00	0.03	0.96
Schooling: Secondary and above =1	0.22	0.26	-0.04	0.03	0.15
<b>Assets</b>					
Oxen =1	0.01	0.01	0.01	0.01	0.36
Cattle (exc Oxen) =1	0.05	0.04	0.01	0.01	0.56
Goats =1	0.23	0.23	0.00	0.03	0.99
Pigs =1	0.10	0.09	0.01	0.02	0.50
Poultry =1	0.52	0.55	-0.03	0.03	0.30
Hoes =1	0.90	0.89	0.01	0.02	0.59
Pangas =1	0.58	0.59	-0.01	0.03	0.86
Ploughs =1	0.02	0.02	0.00	0.01	0.90
Granary =1	0.23	0.23	0.00	0.03	0.97
Bicycle =1	0.25	0.26	0.00	0.03	0.96
Mobile Phones =1	0.47	0.44	0.03	0.03	0.40
Wall Clock =1	0.19	0.19	0.00	0.03	0.89
Mattress =1	0.23	0.24	-0.02	0.03	0.52
Jerry Cans =1	0.21	0.22	-0.01	0.03	0.61
Radios =1	0.47	0.45	0.01	0.03	0.65
Television =1	0.07	0.05	0.02	0.01	0.14
Video or DVD Player =1	0.04	0.03	0.01	0.01	0.44
Farmer: Any of biological parents =1	0.55	0.54	0.00	0.03	0.88
Salaried employee: Any of biological parents =1	0.29	0.28	0.01	0.03	0.79
No schooling: Any of biological parents =1	0.15	0.14	0.01	0.02	0.69
Married =1	0.15	0.18	-0.03	0.02	0.19
Single = 1	0.77	0.76	0.01	0.03	0.62
Divorced =1	0.04	0.03	0.01	0.01	0.38
Ever married =1	0.12	0.13	-0.01	0.02	0.65
Wall: unburnt brick =1	0.40	0.38	0.02	0.03	0.44
Wall: compacted earth = 1	0.11	0.12	-0.01	0.02	0.59
Wall: burnt bricks =1	0.46	0.49	-0.03	0.03	0.38
Toilet: covered pit latrine-private =1	0.41	0.43	-0.03	0.03	0.37
Toilet: covered pit latrine-shared =1	0.34	0.34	-0.01	0.03	0.75
Toilet: uncovered pit latrine =1	0.22	0.20	0.03	0.03	0.32

**Table 1B. Childbearing, sexual outcomes, literacy and beliefs**  
Differences between Control and Treatment at baseline

Variables	Mean		Difference	St. Error	P-Value
	Control	Treatment			
<b>Childbearing and Sexual Outcomes</b>					
Any living biological children =1	0.24	0.25	-0.01	0.03	0.70
Feed and support any non-biological children =1	0.23	0.23	0.00	0.03	0.95
Total number of children under 15 looked after by the respondent*	0.83	0.84	-0.02	0.09	0.85
Ever had sex =1	0.71	0.72	-0.01	0.03	0.75
Age at sexual debut*	17.33	17.35	-0.02	0.24	0.95
First time had sex used condom =1	0.55	0.63	-0.08	0.04	0.04
Age of first sexual partner*	17.36	16.93	0.44	0.28	0.11
STDs =1	0.02	0.02	0.00	0.01	0.65
HIVtesting =1	0.73	0.69	0.04	0.03	0.17
Been tested in the last 12 months =1	0.47	0.46	0.01	0.03	0.72
Been tested in the last 12-23 months =1	0.17	0.13	0.04	0.02	0.06
Been tested in the last 2 years =1	0.08	0.10	-0.01	0.02	0.47
Last HIV test: you ask for the test =1	0.47	0.41	0.06	0.03	0.07
Last HIV test: offered and you accepted =1	0.11	0.10	0.01	0.02	0.51
Last HIV test: Required =1	0.11	0.10	0.01	0.02	0.51
<b>Literacy, schooling attendance, perception about themselves and emotional support</b>					
Able to read a whole sentence in Chichewa =1	0.93	0.92	0.01	0.02	0.74
Read the newspaper: Almost every day =1	0.04	0.04	0.00	0.01	0.99
Read the newspaper: At least once a week =1	0.21	0.19	0.02	0.03	0.39
Read the newspaper: Less than once a week =1	0.24	0.25	-0.01	0.03	0.75
Currently attending school =1	0.10	0.10	0.00	0.02	0.93
Kms to the nearest primary school	2.56	2.01	0.54	0.42	0.20
Ever attended vocational training or technical school =1	0.13	0.14	-0.01	0.02	0.56
Beliefs: Greatest benefit of training is technical skills =1	0.57	0.56	0.01	0.03	0.83
Beliefs: Greatest benefit of training is new friend/peers who can help your business =1	0.02	0.02	-0.01	0.01	0.55
Beliefs: Greatest benefit of training is budgeting/accounting skills =1	0.03	0.02	0.01	0.01	0.45
Beliefs: Biggest hurdle in participating in a training is paying for it =1	0.88	0.90	-0.02	0.02	0.45
Beliefs: Biggest hurdle in participating in a training is finding time =1	0.01	0.01	0.00	0.01	0.56
Beliefs: Biggest hurdle in participating in a training is caring for dependents =1	0.04	0.03	0.01	0.01	0.38
Ever started a business =1	0.32	0.39	-0.06	0.03	0.04
Any work experience =1	0.39	0.37	0.02	0.03	0.59
Ever borrowed money =1	0.34	0.34	0.00	0.03	0.90
Able to obtain a loan of 10,000 MK within the next month =1	0.15	0.18	-0.03	0.02	0.19
Able to obtain a loan of 50,000 MK within the next month =1	0.02	0.04	-0.02	0.01	0.12
Have someone who appreciated or spoke well about the respondent =1	0.11	0.10	0.02	0.02	0.43
Have someone who helped the respondent to learn =1	0.59	0.57	0.03	0.03	0.39
Have someone who assisted the respondent to make plans for the future =1	0.40	0.37	0.03	0.03	0.34
Have someone who provided to the respondent personal advice =1	0.21	0.22	-0.01	0.03	0.84
Have someone who gave professional advice =1	0.57	0.53	0.03	0.03	0.30
Have someone who lent or gave you money =1	0.59	0.59	0.00	0.03	0.99
Have someone who loaned or gave in-kind help =1	0.45	0.47	-0.02	0.03	0.47
Have someone who cheered the respondent up when feeling sad =1	0.24	0.18	0.06	0.03	0.01
Total number of people the respondent had asked for advice =1	0.40	0.42	-0.02	0.05	0.73
Ever had taken any type of alcohol =1	0.18	0.16	0.02	0.02	0.49
Think you would be better being an entrepreneur =1	0.47	0.52	-0.05	0.03	0.12

\*Note: Using two-sample Kolmogorov-Smirnov test for equality of distributions, total number of children (p-value: 0.941), age at sexual debut (p-value: 0.999) and age of first sexual partner (p-value: 0.205) are not significantly different between control and treatment.

**Table 2A. ITT Estimates of Hard Skills: Childbearing in the last 6 and 12 months**  
 OLS Models: Treatment effect measured as dummy variable if received invitation to vocational training

Linear Probability Models				
Variables	WOMEN		MEN	
	6 mths (1)	12 mths (2)	6 mths (3)	12 mths (4)
Rec. Inv. to VCT (T1)	-0.042** [0.016]	-0.070*** [0.018]	-0.010 [0.011]	-0.015 [0.011]
Constant	0.575** [0.219]	-0.340 [0.300]	-0.144 [0.223]	-0.247 [0.323]
Observations	353	353	641	641
R-squared	0.191	0.170	0.088	0.128
Mean of control group (fw-up)	0.09	0.18	0.05	0.08

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 2B. ITT Estimates of Hard Skills: HIV Testing**  
 OLS Models: Treatment effect measured as dummy variable if received invitation to vocational training

Linear Probability Models				
Variables	WOMEN		MEN	
	6 mths (1)	12 months (2)	6 mths (3)	12 months (4)
Rec. Inv. to VCT (T1)	0.114*** [0.030]	0.085*** [0.025]	0.092*** [0.022]	0.074*** [0.024]
Constant	-2.218*** [0.619]	-2.206*** [0.498]	-2.652*** [0.710]	-2.841*** [0.783]
Observations	336	336	622	622
R-squared	0.135	0.198	0.111	0.142
Mean of control group (fw-up)	0.37	0.61	0.33	0.51

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 2C. ITT Estimates of Hard Skills: Transactional Sex**

OLS Models: Treatment effect measured as dummy variable if received invitation to vocational training

Linear Probability Models				
	WOMEN		MEN	
	Been Offered (1)	Offered (2)	Been Offered (3)	Offered (4)
Rec. Inv. to VCT (T1)	-0.055*** [0.017]	0.004 [0.006]	0.011 [0.009]	0.002 [0.012]
Constant	0.107 [0.398]	0.382** [0.163]	-0.092 [0.158]	0.904 [0.860]
Observations	353	353	641	641
R-squared	0.184	0.220	0.068	0.085
Mean of control group (fw-up)	0.13	0.01	0.03	0.08

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3A. ITT Estimates of Hard and Soft Skills: Childbearing in the last 6 and 12 months**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models				
Variables	WOMEN		MEN	
	6 mths (1)	12 mths (2)	6 mths (3)	12 mths (4)
Rec. Inv. to VCT (T1)	-0.034* [0.018]	-0.056*** [0.020]	-0.013 [0.010]	-0.020* [0.011]
Rec. Inv. to VCT (T1) + PT (T2)	-0.044 [0.035]	-0.083 [0.051]	0.018 [0.033]	0.032 [0.039]
Constant	0.559** [0.217]	-0.370 [0.296]	-0.132 [0.231]	-0.226 [0.329]
Observations	353	353	641	641
R-squared	0.193	0.174	0.089	0.129
Mean of control group (fw-up)	0.09	0.18	0.05	0.08

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3B. ITT Estimates of Hard and Soft Skills: HIV Testing**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models

	WOMEN		MEN	
	6 mths (1)	12 months (2)	6 mths (3)	12 months (4)
Rec. Inv. to VCT (T1)	0.121*** [0.032]	0.070*** [0.021]	0.080*** [0.026]	0.065*** [0.025]
Rec. Inv. to VCT (T1) + PT (T2)	-0.038 [0.099]	0.088 [0.061]	0.077 [0.063]	0.054 [0.065]
Constant	-2.234*** [0.627]	-2.170*** [0.493]	-2.599*** [0.719]	-2.803*** [0.789]
Observations	336	336	622	622
R-squared	0.136	0.200	0.113	0.143
Mean of control group (fw-up)	0.37	0.61	0.33	0.51

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 3C. ITT Estimates of Hard and Soft Skills: Transactional Sex**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models

	WOMEN		MEN	
	Been Offered (1)	Offered (2)	Been Offered (3)	Offered (4)
Rec. Inv. to VCT (T1)	-0.055*** [0.016]	0.007 [0.007]	0.009 [0.008]	0.007 [0.013]
Rec. Inv. to VCT (T1) + PT (T2)	-0.002 [0.034]	-0.018* [0.010]	0.016 [0.029]	-0.032 [0.041]
Constant	0.106 [0.405]	0.375** [0.162]	-0.081 [0.152]	0.882 [0.860]
Observations	353	353	641	641
R-squared	0.184	0.222	0.069	0.087
Mean of control group (fw-up)	0.13	0.01	0.03	0.08

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 4A. ITT Estimates of Hard and Soft Skills for Adolescents (Under 20): Childbearing in the last 6 and 12 months**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models

Variables	6 mths (1)	12 mths (2)
Rec. Inv. to VCT (T1)	0.007 [0.014]	0.035 [0.034]
Rec. Inv. to VCT (T1) + PT (T2)	-0.095* [0.049]	-0.146*** [0.051]
Constant	-0.860 [0.564]	-0.944 [0.875]
Observations	211	211
R-squared	0.245	0.212
Mean of control group (fw-up)	0.03	0.05

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\*

**Table 4B. ITT Estimates of Hard and Soft Skills for Adolescents: HIV Testing**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models		
	6 mths (1)	12 months (2)
Rec. Inv. to VCT (T1)	0.111** [0.055]	0.077 [0.046]
Rec. Inv. to VCT (T1) + PT (T2)	-0.169 [0.131]	0.264** [0.111]
Constant	-0.367 [1.933]	-3.428* [1.908]
Observations	206	206
R-squared	0.320	0.370
Mean of control group (fw-up)	0.29	0.38

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 4C. ITT Estimates of Hard and Soft Skills for Adolescents: Transactional Sex**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Linear Probability Models		
	Been Offered (1)	Offered (2)
Rec. Inv. to VCT (T1)	-0.062*** [0.022]	0.024 [0.023]
Rec. Inv. to VCT (T1) + PT (T2)	0.035 [0.050]	-0.041 [0.039]
Constant	-0.168 [0.904]	0.894 [1.398]
Observations	211	211
R-squared	0.237	0.206
Mean of control group (fw-up)	0.12	0.07

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 5. IV-TOT Estimates:: Childbearing, HIV testing and Transactional Sex**  
 IV-OLS Models: Treatment effects measured as dummy variables if participated in vocational training and if received inspirational pep talk

Linear Probability Models				
	Child 12 Months (1)	HIVtest (2)	TS B Offered (3)	TS Offered Ever (4)
Attending VCT (T1)	0.063 [0.062]	0.141** [0.071]	-0.112** [0.047]	0.043 [0.035]
Rec. Inv. to VCT (T1) + PT (T2)	-0.177** [0.077]	0.190* [0.106]	0.091* [0.053]	-0.062 [0.046]
Constant	-0.999 [0.827]	-3.605** [1.685]	-0.072 [0.798]	0.857 [1.200]
Observations	211	206	211	211
R-squared	0.179	0.377	0.194	0.211
Mean of control group (fw-up)	0.05	0.38	0.12	0.07

**Note:** All regressions control for age, age squared, orphan of both parents, head of household, Chichewa as primary language, literate in English, left school 5 or more years ago, occupation and district dummies. Robust standard errors in brackets. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 5. ITT Estimates on Psychological Wellbeing**

OLS Models: Treatment effects measured as dummy variables if received invitation to vocational training and if received inspirational pep talk

Variables	(1) Feel able to improve through hard work	(2) 0.059 [0.058]	(3) Feel not able to perform as well as others	(4) 0.110 [0.079]	(5) Do you have perseverance	(6) 0.016 [0.055]	(7) Aspirations: Perceives to be Entrepreneur more than an	(8) 0.016 [0.017]
Received Offer	-0.022 [0.027]	-0.031 [0.026]	0.023 [0.018]	0.007 [0.023]	0.032 [0.020]	0.030 [0.022]	0.047*** [0.017]	0.035** [0.016]
Received Inspirational Talk								0.081*** [0.024]
Female	0.008 [0.027]	0.009 [0.026]	0.092*** [0.033]	0.095*** [0.032]	-0.002 [0.019]	-0.001 [0.018]	-0.025 [0.023]	-0.022 [0.023]
Female*Received Offer	-0.028 [0.031]	-0.006 [0.028]	-0.092** [0.036]	-0.077** [0.037]	-0.058* [0.031]	-0.066* [0.033]	-0.043 [0.033]	-0.046 [0.036]
Female*Received Inspirational Talk		-0.143 [0.111]		-0.113 [0.103]		0.048 [0.090]		0.009 [0.055]
Constant	0.775** [0.380]	0.767** [0.379]	-0.974*** [0.335]	-0.945*** [0.342]	0.922** [0.390]	0.945** [0.393]	-1.044** [0.509]	-0.996* [0.505]
Observations	991	991	993	993	992	992	992	992
R-squared	0.070	0.072	0.143	0.146	0.128	0.129	0.118	0.123

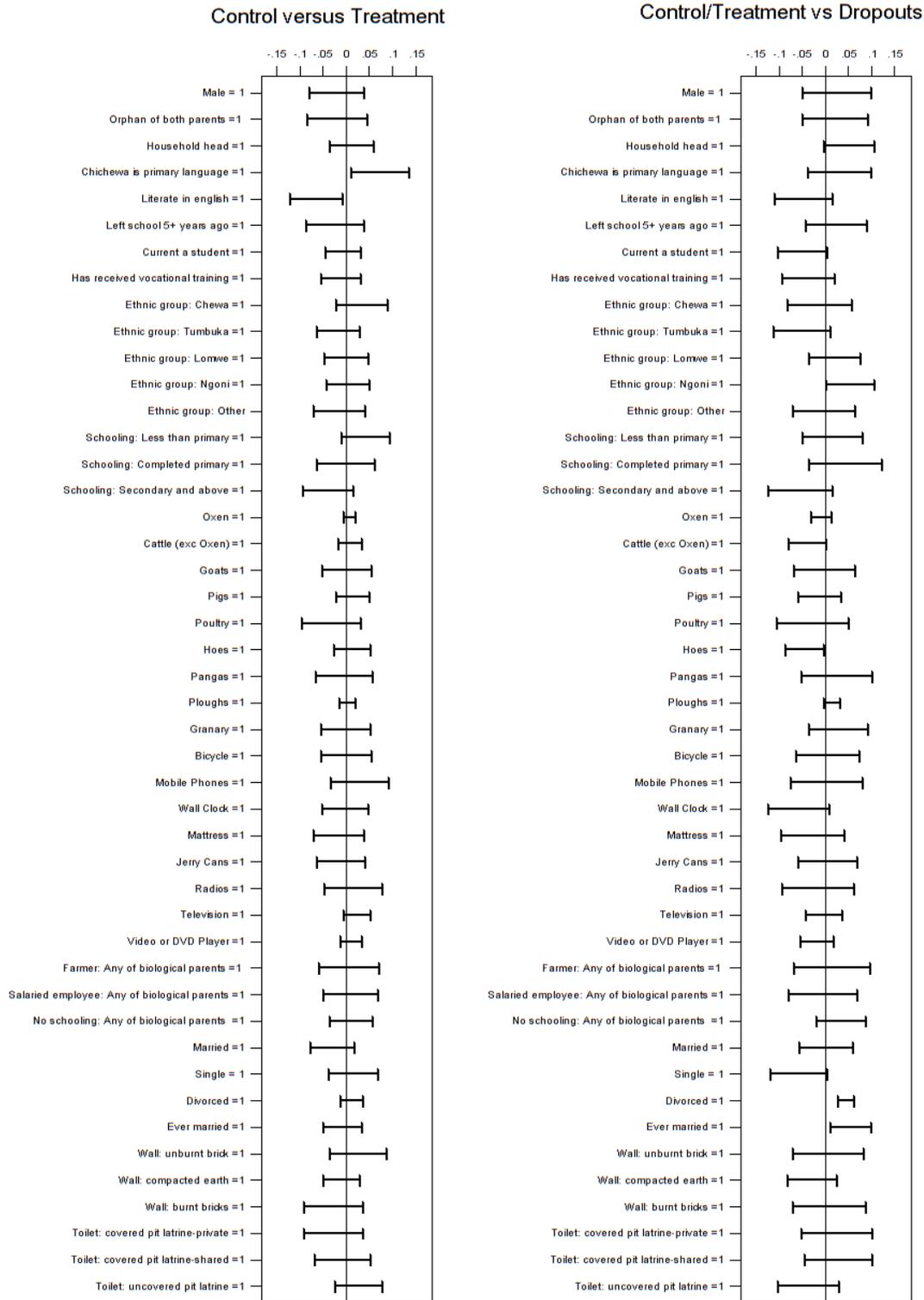
	(9) Prefers to use 10,000MK to start	(10) 0.033 [0.030]	(11) Able to obtain a 10,000MK loan*	(12) 0.033 [0.059]	(13) Happy and satisfied with life*	(14) 0.120*** [0.034]	(15) Life has improved during last year*	(16) 0.109 [0.072]
Received Offer	0.016 [0.011]	0.011 [0.011]	0.068*** [0.019]	0.070*** [0.023]	0.080*** [0.025]	0.062*** [0.022]	0.152*** [0.046]	0.136*** [0.049]
Received Inspirational Talk								
Female	0.055*** [0.013]	0.056*** [0.013]	0.128*** [0.023]	0.128*** [0.024]	0.043** [0.019]	0.046** [0.018]	0.031 [0.022]	0.033 [0.022]
Female*Received Offer	-0.030* [0.015]	-0.034** [0.015]	-0.150*** [0.022]	-0.154*** [0.022]	-0.007 [0.028]	-0.002 [0.029]	-0.061 [0.039]	-0.046 [0.036]
Female*Received Inspirational Talk		0.019 [0.045]		0.026 [0.083]		-0.045 [0.066]		-0.109 [0.101]
Constant	0.715*** [0.186]	0.738*** [0.187]	-0.200 [0.365]	-0.202 [0.359]	-0.103 [0.369]	-0.053 [0.365]	-1.371*** [0.454]	-1.342*** [0.466]
Observations	993	993	990	990	974	974	990	990
R-squared	0.046	0.048	0.078	0.079	0.097	0.103	0.096	0.099

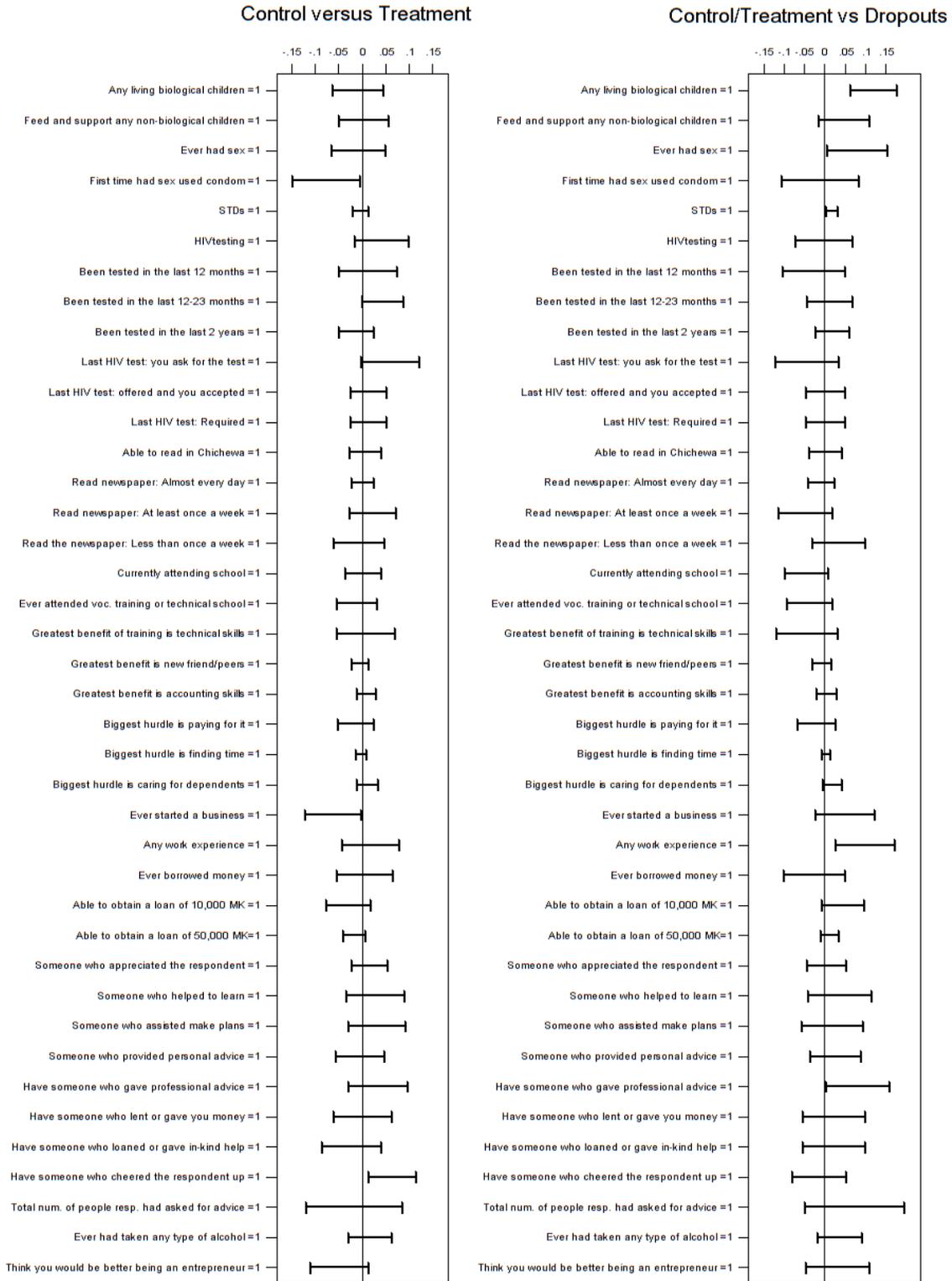
	(17) Food insecurity (often skips meals or worry	(18) 0.129*** [0.027]	(19) Able to earn money outside farming*	(20) 0.117** [0.056]	(21) Has to share earn income with others*	(22) 0.065 [0.065]	(23) Felt confident to solve problems last month*	(24) 0.016 [0.070]
Received Offer	-0.036* [0.020]	-0.032 [0.020]	0.129*** [0.027]	0.112*** [0.028]	0.006 [0.021]	-0.004 [0.026]	-0.006 [0.033]	-0.008 [0.032]
Received Inspirational Talk		-0.025 [0.055]		0.117** [0.056]		0.065 [0.065]		0.016 [0.070]
Female	-0.083*** [0.023]	-0.084*** [0.022]	-0.011 [0.023]	-0.008 [0.023]	0.028 [0.037]	0.029 [0.037]	-0.118*** [0.041]	-0.117*** [0.041]
Female*Received Offer	0.073 [0.050]	0.071 [0.052]	-0.037 [0.040]	-0.038 [0.041]	-0.037 [0.027]	-0.036 [0.028]	0.043 [0.033]	0.031 [0.037]
Female*Received Inspirational Talk		0.016 [0.094]		-0.017 [0.086]		-0.013 [0.099]		0.074 [0.115]
Constant	1.959*** [0.493]	1.950*** [0.496]	-0.073 [0.489]	-0.012 [0.487]	0.485 [0.413]	0.518 [0.414]	0.354 [0.481]	0.384 [0.478]
Observations	993	993	991	991	990	990	993	993
R-squared	0.151	0.151	0.085	0.089	0.087	0.089	0.078	0.079

Robust standard errors in brackets  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

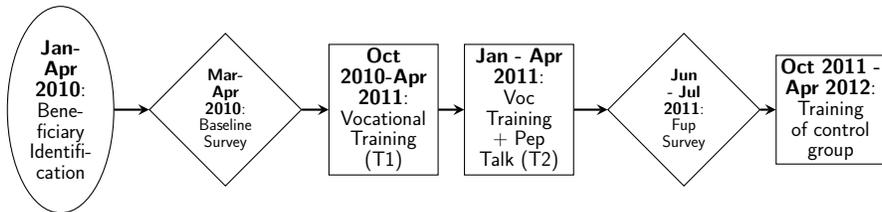
**Graphic 1A. Socio-Demographic and Assets Characteristics**  
Differences between Control, Treatment and Dropouts at baseline



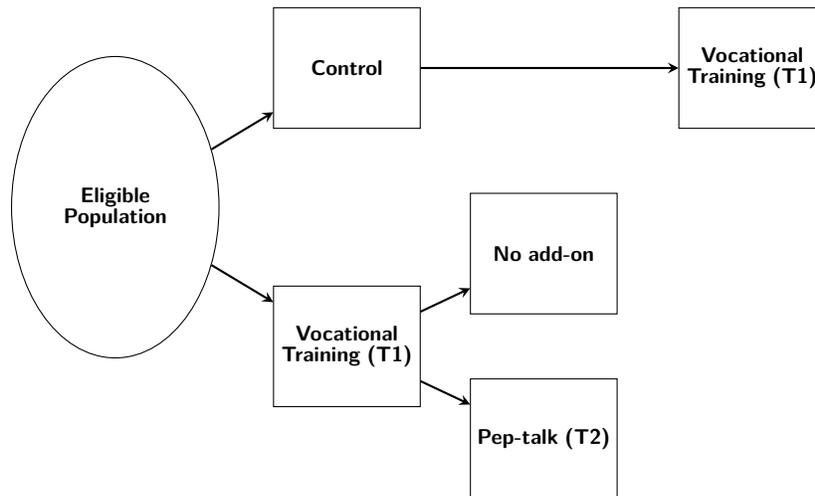
**Graphic 1B. Childbearing, sexual outcomes, literacy and beliefs**  
Differences between Control, Treatment and Dropouts at baseline



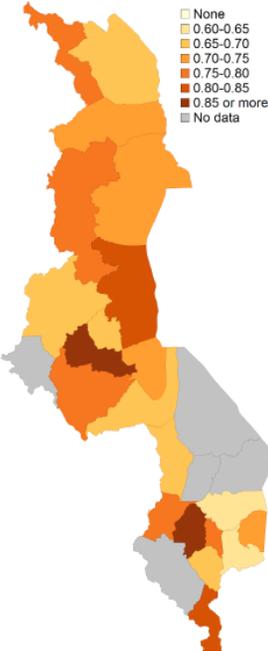
**Figure 1. Data collection**



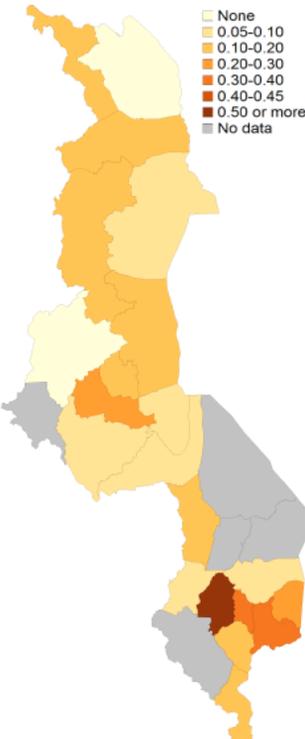
**Figure 2. Evaluation Design**



**Figure 3. Treatment: Vocational Training and Inspirational Talk**  
Proportion of selected eligible population at the district level



**Figure 4. Treatment: Inspirational Talk**  
Proportion of selected eligible population at the district level



# ANNEX 1

## **Script for Inspirational Talk:**

### Introduction:

Thank you for coming to meet with me today. I wanted to speak briefly with you about your progress in your apprenticeship.

How has it been going for you so far?

*Be positive and supportive in response but do not get excessively diverted by a full discussion.*

Earlier today I met with your supervisor and heard more about your program. It seems like you are really learning a lot.

### Empowerment/inspiration:

*This portion should be completed along with the work sheet on page 4 and signed by both the respondent and the interviewer and ultimately taken by the interviewer.*

We're trying to get a sense of how apprentices' chose their careers and their futures. Why do you think you'd make a good [OCCUPATION]? Which of your traits do you think will help you become a great [OCCUPATION]? How do those traits make you a better [OCC]?

If you continue to do well as a [OCC] how do you think that will help you in your life in the next year? [make a certain purchase, take a trip, help out a family member etc.]

How about in five years? [start their own business, make a larger purchase, afford a wedding etc.]

### Future Earnings:

How much do you think that an average [OCCUPATION] can make over the course of a week?

And how much do you think a really good [OCCUPATION] can make over the course of a week?

How do you think you would use that income? I'm sure that having that additional money will prove a big help for you in your life.

### Employability:

As a young [OCCUPATION] in your town, do you think it will be easy to find a lot of work? What will you do if you aren't able to find work immediately? Finding work is never easy. But if you are willing to start small and work hard, I'm sure that you will be able to improve as a [OCCUPATION] over time, and little by little your business will grow so you should just remember to be patient and to stay optimistic.

Conclusion:

Well, it sounds like with the skills you are learning here, you have really set the foundation for becoming a successful [OCCUPATION]. And I am sure that as you get more experience you will continue to get better and better. Given how much progress you have already made during this apprenticeship, as the years go on and you continue learning and improving, I am sure that you will be able to be more and more successful. Maybe soon you will be able to [MENTION ONE OF THEIR 1-YEAR ASPIRATIONS] or even [MENTION A 5-YEAR ASPIRATION]! Becoming a successful [OCC] will really be a big help to you achieving your aspirations.

In a few years when you are a well experienced [OCCUPATION] in [TOWN/CITY] I am sure that you will be doing very well with a lot of success! I wish you the best of luck. This will doubtlessly be a really exciting year for you.

Thanks so much for your time. Congratulations and keep up the good work!

**Apprentice Skills Traits and Future Aspirations Form**

I. What are three of the apprentice’s key traits that make them well suited for their occupation?

<b>TRAIT</b>	<b>IMPACT ON CAPABILITY</b>
1.	
2.	
3.	

II. What three things will your new skills and a job help you to do or achieve over the next year?

<b>1 Year Aspirations</b>
1.
2.
3.

III. If you continue to be successful in your job, how do you imagine your life in five years?

<b>5 Year Aspirations</b>
1.
2.
3.

Signatures:

\_\_\_\_\_  
Apprentice Name

\_\_\_\_\_  
Interviewer Name

**Table A.1 Number of Observations of Control and Treatment by District**

District	Control	Treatment	Total
Blantyre	0	37	37
Chiradzulu	9	35	44
Chitipa	10	31	41
Dedza	14	32	46
Dowa	7	49	56
Karoga	16	33	49
Kasungu	18	35	53
Likoma	13	22	35
Lilongwe	41	133	174
Mulanje	17	29	46
Mwanza	14	32	46
Mzimba	25	77	102
Mzuzu	10	35	45
Neno	6	32	38
Nkhata Bay	11	28	39
Nkhotakota	7	32	39
Nsanje	9	37	46
Ntcheu	19	37	56
Ntchisi	17	33	50
Phalombe	14	36	50
Rumphi	11	26	37
Salima	12	33	45
Thyolo	14	27	41
Zomba	14	22	36
Total	328	923	1,251