

Returns to soft skills training for youth in Tanzania

Pre-Analysis Plan

March 2022

Abstract: This document outlines the pre-analysis plan for measurement and analysis of socio-emotional skills among young men and women in Tanzania, as well as the impact evaluation of three variants of a socio-emotional skills training course for the same sample via a randomized controlled trial. The document was written in parallel with the first round of endline data collection; after baseline data cleaning and variable construction, but before the correlational analysis specified below was conducted on the baseline data, and before the first round of follow-up data was analysed in any way.

1. Introduction

There is growing recognition of the importance of soft skills in improving young people's labor market outcomes. Rigorous measurement of specific soft skills in the context of a large-scale field study is often challenging however, and there is little evidence on the levels of some such skills among vulnerable youth populations, as well as potential gender gaps in such skills. Moreover, there is little causal evidence as to which skills or sets of skills are most malleable in late adolescence and early adulthood, and which may have the highest labor-market returns for such populations. This study deploys novel measures of fourteen soft skills with a sample of young male and female adults in urban and peri-urban Tanzania. We then use an individual-level randomized controlled trial to estimate the causal impacts of training modules focused on two different sets of soft skills – awareness skills and management skills – or their combination, on young men and women's skills and on their labor market outcomes.

2. Study design

2.1 Sample and randomization

The study's target sample consists of 4800 youth (2400 young women and 2400 young men) from 40 clusters spread over three urban areas of Tanzania: Dodoma, Dar es Salam and Iringa. We conducted an initial listing exercise in January and February of 2021 to identify eligible individuals from 155 streets (the smallest administrative unit within urban areas) which were sampled based on the proximity of the streets to BRAC branch offices in these three urban areas. Eligible individuals were defined as being: aged 16-26; not in full time education or attending boarding school, and not in full-time formal salaried employment. This individual census listing yielded 6,620 youths who fit our eligibility criteria. We then constructed clusters comprising large streets or combinations of smaller streets, on the basis of having: an existing venue suitable for hosting a training; at least 60 eligible young men and 60 eligible young women within a reasonable travel distance to the training venue; and community leaders who confirmed interest in the program. This cluster construction yielded 40 clusters: 29 in Dar-es-Salam, 8 in Dodoma and 3 in Iringa. Within the 40 clusters, we used a computer to draw a random sample of 60 adolescent girls and 60 adolescent boys per community to target for the baseline survey and potential program participation.

The baseline survey was conducted face-to-face at respondents' homes in May-June 2021. Following the completion of the entire baseline survey, computer randomisation of assignment to treatment arms was conducted in office by members of the research team. Randomisation was conducted at the individual level, stratified on location (street), gender, and age above or equal to vs below the median age among sampled individuals in that community. Individuals within each stratum were randomly allocated with equal probability to one of three treatment arms – receiving training on the first set of skills, receiving training on the second set of skills, receiving training on both sets of skills – or to the control arm (no training).

2.2 Intervention

The intervention took place in September to December 2021, and was implemented by BRAC Tanzania. According to their treatment assignment, study participants were invited to participate in a five-day training on “awareness” skills, a five-day training on “management” skills, or the five-day training on awareness skills followed the next week by the five-day training on management skills (i.e. ten days of training in total). “Awareness skills” include self-awareness, emotional awareness, listening, and empathy. “Management skills” include both self-management skills (emotional regulation, self-control, perseverance, personal initiative, and problem-solving and decision-making) and relationship management skills (expressiveness, interpersonal relatedness, influence, negotiation, and collaboration). The curricula for the interventions were developed by Alkimia Consulting in collaboration with the research team, building on recent advances in psychology and behavioral economics as well as BRAC's Empowerment and Livelihood for Adolescents (ELA) curriculum. The curricula were piloted by Alkimia Consulting in the local context and revised during an extended training-of-facilitators. The final facilitation team comprised 18 facilitators, evenly split by gender. The training sessions were split by gender, and facilitators facilitated groups of their own gender.

2.3 Key data sources

Baseline Survey

May-June 2021, Target N=4800, actual N=4750. Modules included demographic information about the individual and household; household assets; education and work history; employment networks; employment expectations and aspirations; personal finance; time use; decision-making; gender attitudes; perceived gender norms; sexual and reproductive health; attitudes towards intimate partner violence; mental health; cognitive ability; risk and time preferences; socio-emotional skills and socio-emotional-adjacent skills (self-reports and task/situational-judgement measures, detailed below).

First follow-up survey

February-March 2022, Target N=4750. Modules include recent education and work history; employment expectations and aspirations; personal finance; time use; decision-making; gender attitudes; perceived gender norms; attitudes towards intimate partner violence; mental health; socio-emotional skills and socio-emotional-adjacent skills (self-reports and task/situational-judgement measures, detailed below).

BRAC administrative data

September-December 2021. Participant and trainer feedback on facilitators; facilitator demographic information and skill measures (N=18); participant attendance as recorded by facilitators (N=3551).

2.4 Research questions and hypotheses

This study design will allow us to answer the following research questions:

- What are the levels of awareness and management skills among youth in Tanzania, as measured via self-reports and via task-/situational judgement- based measures, and are there gender gaps in such skills?
- What are the impacts of training on awareness skills, management skills, or both, on young adults' skills, economic participation and broader well-being? Do these impacts differ by gender?
- Which measures of socio-emotional skills better demonstrate predictive validity?

3. Analysis

3.1 Variable lists

Individual characteristics

- Age, years
- Respondent is married/cohabiting, 0/1
- Respondent's years of education
- Cognitive skills, score 0-6
- Respondent is currently attending school or vocational training (part-time), 0/1
- Respondent is the household head, 0/1
- Respondent is currently engaged in any income generating activity (part-time), 0/1
- Respondent engaged in paid work in the last 7 days, 0/1
- Respondent currently owns or operates a business, 0/1
- Respondent has a bank account, 0/1
- Total amount of formal and informal savings, TZS

Household characteristics

- Head of household is female, 0/1
- Number of household members
- Number of female household members aged ≥ 14
- Number of male household members aged ≥ 14
- Household total earnings from main activities in the past year, TZS
- Household owns smart phone, 0/1
- Major construction of walls is cement, 0/1
- Type of toilet is flush toilet, 0/1
- Mother's years of education
- Father's years of education

Primary outcomes short run

N.B. the scores for each individual skill will be created via confirmatory factor analysis; with the exception of the task-based measures which require a task-specific scoring method, and those standardized scales which have their own recommended scoring mechanism (grit, resilience, locus of control).

Awareness skills (self-reported)

- Self-awareness score
- Emotional awareness score
- Listening score
- Empathy score
- Average score of SES individual awareness (self-awareness & emotional awareness)
- Average score of SES social awareness (listening & empathy)
- Average score of SES awareness (self-awareness, emotional awareness, listening & empathy)

Management skills (self-reported)

- Emotional regulation score
- Self-control score
- Perseverance score
- Personal initiative score
- Problem-solving score
- Expressiveness score
- Interpersonal relatedness score
- Influence score
- Negotiation score
- Collaboration score
- Average score of SES self-management (emotional regulation, self-control, perseverance & problem-solving)
- Average score of SES relationship management (expressiveness, interpersonal relatedness, influence, negotiation & collaboration)
- Average score of SES management (emotional regulation, self-control, perseverance, problem-solving, expressiveness, interpersonal relatedness, influence, negotiation & collaboration)

Awareness skills (task-/SJT-based measure)

- Self-awareness score
- Emotional awareness score
- Listening score
- Empathy score
- Average score of SES individual awareness (self-awareness & emotional awareness)
- Average score of SES social awareness (listening & empathy)
- Average score of SES awareness (self-awareness, emotional awareness, listening & empathy)

Management skills (task-/SJT-based measure)

- Emotional regulation score
- Self-control score

- Perseverance score
- Personal initiative score
- Problem-solving score
- Expressiveness score
- Interpersonal relatedness score
- Influence score
- Negotiation score
- Collaboration score
- Average score of SES self-management (emotional regulation, self-control, perseverance & problem-solving)
- Average score of SES relationship management (expressiveness, interpersonal relatedness, influence, negotiation & collaboration)
- Average score of SES management (emotional regulation, self-control, perseverance, problem-solving, expressiveness, interpersonal relatedness, influence, negotiation & collaboration)

Socio-emotional-adjacent skills (self-reported)

- Grit score
- Resilience score
- Locus of control score

Secondary outcomes short run

- Job search:
 - *Looked for better employment opportunities in the past 30 days* 0/1
- Employment and earnings:
 - *Hours worked in a typical week*
 - *Engaged in any IGA / wage work / paid work in the last 7 days*, 0/1
 - *Earnings (from respondent's main IGAs) in the last 30 days*, TZS
- Education or training:
 - *Enrolment in any education or training (part- or full-time)*, 0/1
- Aspirations:
 - *Respondent plans to start a new IGA*, 0/1
- Decision-making:
 - *Decision-making involvement score (1-3, averaged across all decisions)*
 - *Respondent can make own decisions completely/moderately* (0/1)
- Mental health:
 - *Depression score, Patient Health Questionnaire Depression Scale (PHQ-8)*
 - *Anxiety score, General Anxiety Disorder -7 (GAD-7)*
- Gender attitudes:
 - *Gender Equitable Index (disagrees with gender regressive statements)*, [0-1]

We will winsorize at the 99th percentile all quasi-continuous variables (e.g., age) and continuous variables (e.g. income). For variables in TZS, we will also use the inverse hyperbolic sine transformation.

3.2 Balance

We will test for balance between the treatment groups (T1 Awareness, T2 Management, T3 Awareness and Management) and control (C) group of the 4750 young women and men in the IE sample. Tested variables will include the lists of baseline individual and household characteristics, as well our primary and secondary outcome variables as measured at baseline, all as specified above.

For each tested variable, we will present the sample mean, the mean in the T1, T2 and T3 groups and the mean in the C group, and t-tests of equality of the T1, T2, T3 and C group means. We will also report an F-test of joint significance of the t-tests across all tested variables.

3.3 Baseline data analyses

We will report:

1. For each of the Awareness skills (self-reported) and Management skills (self-reported): Cronbach's alpha and confirmatory factor analysis.
2. For each of the Awareness skills (task-/SJT-based measure) and Management skills (task-/SJT-based measure): confirmatory factor analysis.
3. For each of the Awareness skills (self-reported), Management skills (self-reported), Awareness skills (task-/SJT-based measure) and Management skills (task-/SJT-based measure): the mean in the sample, the mean for females, the mean for males, and a t-test of equality of the female and male means.
4. For each of the Awareness skills (self-reported), Management skills (self-reported), Awareness skills (task-/SJT-based measure) and Management skills (task-/SJT-based measure): a regression of the skill measure on age, education, mother's education, father's education, cognitive skills, and adjacent skills.
5. For each of the Awareness skills (self-reported), Management skills (self-reported), Awareness skills (task-/SJT-based measure) and Management skills (task-/SJT-based measure): correlation of the skill measure with each of the secondary outcomes listed above, controlling for the variables specified in point 3.

For the correlations in 4 and 5, for each coefficient of interest we will report the p-value and also the q-value calculated to account for multiple hypothesis testing within each family out outcomes (Awareness skills (self-reported), Management skills (self-reported), Awareness skills (task-/SJT-based measure) and Management skills (task-/SJT-based measure)). We will use the procedure described below in Section 3.7.

3.4 Attrition

We will test for differential attrition between baseline and endline on the lists of core baseline demographic and firm characteristics as specified above, as well as by each of the treatment dummies. For each tested variable, we will present the full sample mean at baseline, the baseline mean for those who completed the endline survey (non-attriters), and a t-test of equality of the full baseline and non-attriter group means. We will also report an F-test of joint significance of the t-tests across all baseline individual and household characteristics.

3.4 Impact analyses

Our main estimations will use the following ANCOVA specification:

$$Y_{is,t=1} = \beta_0 + \beta_1 T_{1is} + \beta_2 T_{2is} + \beta_3 T_{3is} + \beta_4 Y_{is,t=0} + \beta_5 M_{is,t=0} + \beta_6 X'_{is,t=0} + \mu_s + \varepsilon_{ist} \quad (1)$$

for individual i in stratum s ; where:

$Y_{ib,t=1}$ is the outcome variable measured at endline. We will estimate Equation (1) for each of the primary and secondary outcomes as specified above.

T_{1is} , T_{2is} and T_{3is} are treatment dummies taking the value of one if the individual was assigned to the T1, T2 or T3 group respectively.

β_1 , β_2 and β_3 will measure the intent-to-treat effect of being assigned to each of the treatment groups compared to the control group.

$Y_{ib,t=0}$ is the baseline value of the outcome variable, set to zero for missing values. If a very similar but non-identical question was asked at baseline (e.g., the same outcome but for a different recall period), we will control for the similar variable as measured at baseline instead.

$M_{i,t=0}$ is a dummy variable indicating whether the baseline value is missing.

$X'_{is,t=0}$ is a vector of any baseline control variables identified as unbalanced above.

μ_s is a vector of strata fixed effects.

ε_{ist} is the error term, robust to individual heteroskedasticity (i.e. clustered at the individual level, since treatment was randomized at that level).

We will also re-estimate Equation (1) by a post-double LASSO procedure, allowing the LASSO to select from all of the balance variables.

3.5 Survey non-response

If we observe significantly differential attrition by any of the baseline individual and household variables listed above, we will address this via inverse probability weighting. We will first run a probit regression to estimate the likelihood of a respondent appearing in the follow-up sample on the basis of these vectors of characteristics, use the estimated coefficients to compute the predicted probability for each respondent, and then re-estimate the main analyses including the predicted probabilities as weights.

If attrition significantly differs by treatment status, then we will test the robustness of our impact results using Lee bounds.

3.6 Heterogeneity

We will re-estimate the above equations with an interaction between each of the treatment dummies and the following variables as measured at baseline, as well as the variable itself:

- Female, 0/1
- Age above or equal to median, 0/1
- Years of education above or equal to median, 0/1
- Cognitive ability above or equal to median, 0/1
- Awareness skills (aggregate self-reported; aggregate task-/SJT-based measure) above or equal to median, 0/1
- Management skills (aggregate self-reported; aggregate task-/SJT-based measure) above or equal to median, 0/1

3.7 Multiple hypotheses testing

We will control for multiple inference by calculating q-values for coefficients of interest within the families of outcome variables specified above, limiting the false discovery rate (FDR) using the method proposed by Benjamini and Hochberg (1995). We will report both uncorrected p-values and FDR-adjusted q-values for each regression. For heterogeneity analyses, we will also correct p-values for each interaction of the treatment with the heterogeneity variable in question across the regressions with outcome variables within each family.