

# Pre-analysis plan for “Boosting (self-)employment for youth in Cote d’Ivoire: the impact of socio-emotional skills training and aspirational interventions in the context of the IRC PRO-Jeunes project”

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## 1. Background

### a. Context

PRO-Jeunes is a 5-year program (2017-2021) implemented by the International Rescue Committee (IRC) that targets 10,000 vulnerable young people (60% female) aged 15-30 in rural and urban Côte d'Ivoire (Abidjan, Bassam, Korogho and Tchologo). The project is designed to offer (self-)employment support services that are particularly flexible to meet a wide range of the beneficiaries' needs, and that adapt to their different starting points and knowledge levels.

The sizeable population growth rate of 3.1% per year over the past three decades has stifled the increase in GDP per capita (12% increase from 1960 to 2010), despite the overall economic growth (the GDP increased 6.5 times from 1960 to 2010). As a result, poverty has remained widespread (46.3% in 2015), placing Côte d'Ivoire 172 out of 188 countries on the Human Development Index (2014). After a decade-long political crisis which ended in the first half of 2011, Côte d'Ivoire achieved renewed political and economic stability over the last ten years. From 2012 to 2019, annual GDP growth rates have been sound, ranging between 6.2% and 10.7%, before dropping to 1.8% in 2020 as a consequence of the COVID-19 pandemic.

Due to years of forced idleness, most youth in Côte d'Ivoire lack the skills, knowledge, and resources to grasp (self-)employment opportunities. Private firms struggle to find suitably trained employees and entrepreneurs. Women and girls in particular have largely been excluded from the post-crisis recovery dynamics. Age and gender inequalities are sustained by traditions and social norms as well as a lack of enforcement of gender policies and women's rights. Côte d'Ivoire is among the lowest-ranked African countries in terms of gender equality, ranking 43 out of 52 countries on the Africa Gender Equality Index in 2015. Access to and control of resources are a primary challenge for women and continuously pose limitations to youth making independent employment and business decisions and investments. Several obstacles hinder youth from realizing a full spectrum of opportunities: inadequate education, the low quality of vocational training, limited access to business development services and the lack of initiatives that introduce and support youth in linking with private sector entities. Even for those youth with professional experience and/or qualifications, accessing private sector opportunities and capital for business creation is difficult. Demographic pressure, in the form of an additional 350,000 job seekers entering the labor force each year, means there are far too many youths for each opportunity.

Employment trainings are an important tool to improve the skills of young people. However, young people already have several different obligations, suggesting that take-up may be low especially if they lack information on the benefits of the training. Moreover, it is not clear which skills the training should focus on. There has been an increased interest in socio-

emotional skills in recent years, but it is not clear whether it is intrapersonal skills (such as motivation, awareness, self-control) or interpersonal skills (such as clear communication, listening, conflict resolution) that matter. This study will look at the impact of an intrapersonal-focused versus an interpersonal-focused youth training program, combined or not with aspirational videos.

## b. Description of the intervention

The PRO-Jeunes project was specifically designed to best inform and support young people, by proposing a holistic approach to developing specialized skills for individual sectors and key transferrable skills applicable across a mix of livelihoods. The project has three phases and includes innovative interventions.

The first phase is a foundational skills training (life skills, numeracy, business, and social and emotional skills) delivered through an e-learning platform, using tablets. Delivery through an e-learning platform enables greater scale and cost-efficiency. It also enables learning at an individual pace and anywhere, which is particularly important for women. During phase 1, the skills training is complemented by in-person coaching. At the center of the training approach is the IRC's "Learn to Earn" Curriculum. The IRC has spent several years developing this wide-ranging curriculum in use across several countries in Sub-Saharan Africa and the Middle East.

During phase 2, youth enter either: 1) the employment pathway or 2) one of two entrepreneurship pathways, with most program beneficiaries (70%) going into the entrepreneurship pathway. In the entrepreneurship pathway, some youth immediately embark in developing a business plan and receive continued coaching. They will also be linked to financial services and participate in business competitions – this is the generalist entrepreneurship track. Others will receive vocational trainings in partners' industries to prepare them for a business start-up in that specific industry. Industries that are currently offered by the program are energy, retail, information, and communication technology (ICT).

The third phase, or "start-up phase", focuses on business start-up and continued employment search. During this phase, coaching will be intensified.

Over the lifetime of the project, gender sensitization for staff and participants, and group discussions in intervention communities will take place.

The proposed impact evaluation will examine the extent to which psycho-social factors - socio-emotional skills, attitudes and gender norms - affect youth employment and entrepreneurship, as well as secondary outcomes such as sexual and reproductive health and women's empowerment, including experience of gender-based violence. By measuring the impact of an intrapersonal-focused versus an interpersonal-focused curriculum for the training program, the study will contribute to filling the gap in the economic and social sciences literature on whether

interpersonal skills prove more relevant for African women’s economic outcomes and empowerment than their intrapersonal skills. The impact evaluation will also test whether behavioral nudges, for instance aspirations interventions such as exposure to role models, can improve the impact of socio-emotional skills trainings on youth employment, especially women. Answering these questions is key to ensure the success of programs teaching SES as well as aiming to boost youth employment and entrepreneurship in Sub-Saharan Africa and Cote d’Ivoire in particular.

In the context of this program, another experiment will look at whether sending information about the benefits of the program to potential applicants can increase take-up. The experiment design is described at the end of this pre-analysis paper.

## 2. Study design

### a. Impact evaluation design

#### i. Overall sample selection

The project targets young people aged 15 to 30 in Abidjan and Grand Bassam in Cote d’Ivoire. Recruitment to the PRO-Jeunes program is done in three stages: (i) interested young people first register and express their interest to the program; (ii) after screening all the applications, the project team call the eligible candidates to give them more information about the program and confirm their interest in participating; (iii) eligible applicants who have confirmed their interest in participating to the program during stage (ii) are then invited to come to an “enrollment meeting”. Recruitment is done either by program staff directly on the street, or people interested in the program can apply in application centers where they fill an application form and provide information about their motivation to participate in the program and some credentials.

#### ii. Training experiment

### *Sample selection*

The training experiment aims to target 10,000 15-30 years old men and women, divided into 6 cohorts. The impact evaluation will focus on 3 cohorts. For each cohort, the sample is obtained by screening eligible candidates among those who confirmed interest at their “enrollment meeting” and who signed up to the training (see above).

## *Experiment design*

The Randomized Controlled Trial conducted under this study contains two experiments that are cross-randomized. The first one aims to test what socio-emotional skills (SES) have the most impact on labor market outcomes. Specifically, it asks whether intrapersonal skills have more of an impact than interpersonal skills. The evaluation is done by randomizing the training received at the individual level, giving either intrapersonal or interpersonal skill training to participants. The sample of eligible youths who have registered to the program is thus randomized into:

- A control group, where the participants receive no training. However, it is possible for those in the control group to reapply to the program in subsequent cohorts. If they do, they will be randomly assigned to either treatment or to the control group for that next cohort, while remaining a part of the control group for the first cohort.
- Two treated groups receiving training. Both groups receive a foundational training that includes socio-emotional learning, life skills modules and business skills modules delivered through e-learning on tablets, with regular in-person sessions with coaches. The life skills modules consist in one module related to healthy living (nutrition and hygiene), one module about healthy relationships (sexual health, family relationships, gender roles, violence), and three modules that delve into life skills that are key for businesses, such as budgeting, record keeping, and saving money. The business skills modules consist in seven modules focusing on starting a business, strategies, communication, management, budgets, business plans. The groups differ in the content of the socio-emotional skills training modules. The first treatment group is trained on intrapersonal socio-emotional skills through the following modules:
  - Values and Skills
  - Time Management and Problem-Solving
  - Stress Management
  - Paying Attention and Staying on Task
  - Practicing Brain Building
  - Understanding and Expressing My Emotions in Business
  - What I Say Affects Others
  - Mindfulness

The second treatment group is trained on interpersonal socio-emotional skills through the following modules:

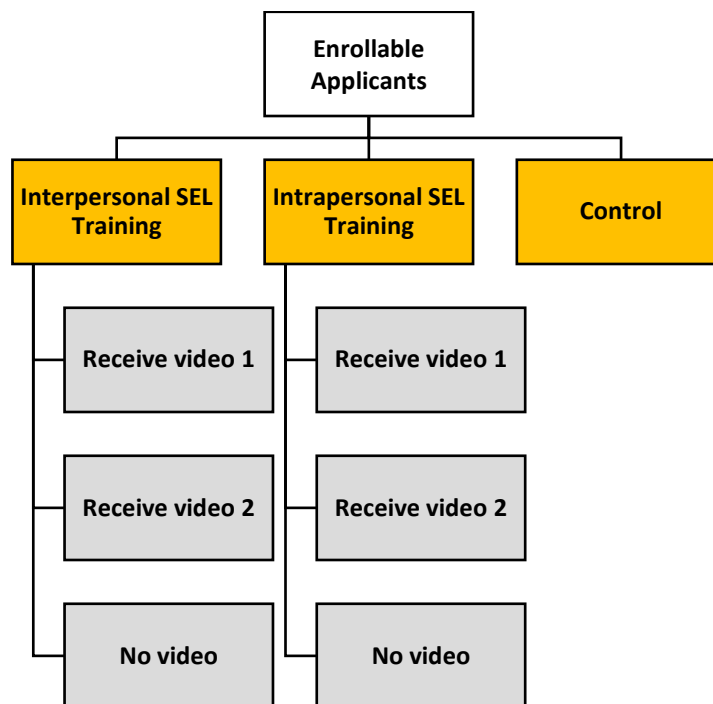
- Communication Skills
- Making Decisions Together with your Partner
- Conflict Mediation
- Building a Positive Community
- Analyzing the Community's Strengths and Weaknesses
- Understanding Prejudice and Stereotyping
- Teamwork
- Conflict Mediation in Business

iii. Aspirational video experiment

The SES experiment is cross-randomized with a video-based aspirations intervention, aiming to test whether there are any interactions between socio-emotional learning and aspirations' building. There are two different videos. The first video insists that failure is part of creating a business and that overcoming individual failures leads to success. The second one challenges gendered perceptions of the sharing of domestic duties and financial responsibilities, and highlights the positive repercussions of women's work and financial independence on the household. Each SES treatment arm is cross-randomized with this experiment, so that individuals have either access to no video or one of the two videos on their e-learning tablets.

To summarize each individual treatment more succinctly, the different treatment arms are described in Figure 1. The randomization is stratified by gender, implementation areas/communes and by expressed preferences for program track (Energy, Retail, ICT, or salaried work).

Figure 1: Representation of control & treatments arms



b. Data and sample size

i. Timeline

The first cohort to be evaluated was surveyed at baseline in October 2020. It is expected to end in January 2022. For each cohort, there will be:

- A baseline survey.
- A monitoring survey that will be conducted three months after the beginning of the foundational courses.
- A midline survey that will be conducted three months after the energy track graduation, which is the track that lasts the longest. The midline survey would thus be conducted one year after foundational training starts.
- An endline survey that will be conducted nine months after the midline survey.

ii. Data collection and sample size

The total sample size for this study is 6018, among which half are expected to be women (see Table 1). Based on power calculations, in order to be able to detect an impact of 30% on expenses, or an impact of 2% on the personal initiative scale, each treatment arm needs to contain around 1250 individuals. The control group needs to be more than double the size of the treatment group, in order to (i) be able to measure the impact of the program by pooling together SEL1 and SEL2 (ii) anticipate some attrition of the control group coming from people reapplying to the program in the following cohorts.

Table 1: Sample size

Traitements	Sample size Cohort 1	Sample size Cohort 2	Sample size Cohort 3	Sample size Total
<b>SES 1 + no video</b>	91	226	162	<b>479</b>
<b>SES 1 + video 1</b>	91	225	162	<b>478</b>
<b>SES 1+ video 2</b>	91	225	162	<b>478</b>
<b>SES 2 + no video</b>	91	226	162	<b>479</b>
<b>SES 2 + video 1</b>	91	225	162	<b>478</b>
<b>SES 2 + video 2</b>	95	225	165	<b>485</b>
<b>Control</b>	614	1334	1193	<b>3141</b>
<b>Total</b>	1164	2686	2168	<b>6018</b>

### 3. Methodology

a. Specifications

i. Balance checks

To test the internal validity of the study, we check the randomization between each treatment arm and the control group using the baseline data of all 3 cohorts. We test the balance by estimating the following equation for each outcome variable:

$$Y_i = \alpha + \beta T_i + \varepsilon_i \quad (1)$$

Where  $Y_i$  is the baseline value of the main outcome indicators listed in 3.d. as well as socio-demographic characteristics, and  $T$  is a vector of binary indicators for each treatment group, so a total of 6 treatment dummies as explained in section 2.a.

Based on imbalances ( $\beta$  significantly different from 0 in equation (1)), we may adjust the list of control variables used in the analysis.

ii. Impact of SES and videos

*Intention to treat: SES training*

Our first impact specification will analyze how different trainings impact labor market outcomes as well as a number of secondary measures. The sample used will be based on the three cohorts of individuals who applied to the program. The aim of this specification is threefold:

1. To measure the difference in impact between the training on interpersonal and intrapersonal socio-emotional skills (SES)
2. To measure the interaction between aspirational videos and SES training
3. To measure any differences in the impact of aspirational videos depending on their type.

We will estimate the intention to treat (ITT) of the randomization on outcomes of interests. We will run the following regression to estimate the impact of socio-emotional skills training.

$$Y_{it} = \alpha + \gamma_1 T_{1it} + \gamma_2 T_{2it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (2)$$

In which:

- $Y_{i0}$  is the outcome of interest for individual  $i$  at baseline
- $Y_{it}$  is the outcome of interest for individual  $i$  at midline ( $t=1$ ) or at endline ( $t=2$ )
- $T_{1it}$  is the indicator of interpersonal SES training, equal to 1 when the individual was invited to participate in the interpersonal SES training, in addition to the life skills, numeracy and business training, and in-person coaching
- $T_{2it}$  is the indicator of intrapersonal SES training, equal to 1 when the individual was invited to participate in the intrapersonal SES training, in addition to the life skills, numeracy and business training, and in-person coaching
- $X_{it}$  is a list of controls, including strata (implementation areas/communes, gender, and training path)
- $\delta_t$  is a dummy for each cohort.

This regression will be run twice, once using midline data and once again using endline data. We will also test pooling together midline and endline data, controlling for a survey dummy.



In a further specification, all treatment variables will be interacted with this survey dummy, to test for the sustainability of impact.

Interpretation:

Hypothesis	Test
Interpersonal training has a positive impact on outcomes.	$H_0: \gamma_1 \leq 0$
Intrapersonal training has a positive impact on outcomes.	$H_0: \gamma_2 \leq 0$
Interpersonal and intrapersonal trainings have different impacts on outcomes.	$H_0: \gamma_1 = \gamma_2$

*Intention to treat: aspirational videos*

In addition, we will estimate the following equation among trainees only to characterize the impact of aspirational videos:

$$Y_{it} = \alpha + \gamma_1 V_{1it} + \gamma_2 V_{2it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (3)$$

In which:

- $Y_{i0}$  is the outcome of interest for individual  $i$  at baseline
- $Y_{it}$  is the outcome of interest for individual  $i$  at midline ( $t=1$ ) or at endline ( $t=2$ )
- $V_{1it}$  is the indicator of aspirational video 1, equal to 1 when the individual had access to aspirational video 1 on her e-learning tablet
- $V_{2it}$  is the indicator of aspirational video 2, equal to 1 when the individual had access to aspirational video 2 on her e-learning tablet
- $X_{it}$  is a list of controls, including strata (implementation areas/communes, gender and training path)
- $\delta_t$  is a dummy for each cohort.

This regression will be run twice, once using midline data and once again using endline data. We will also test pooling together midline and endline data, controlling for a survey dummy. In a further specification, all treatment variables will be interacted with this survey dummy, to test for the sustainability of impact.

Interpretation:

Hypothesis	Test
Aspirational video 1 has a positive impact on outcomes.	$H_0: \gamma_1 \leq 0$
Aspirational video 2 has a positive impact on outcomes.	$H_0: \gamma_2 \leq 0$

Aspirational videos have different impacts on outcomes.	$H_0: \gamma_1 = \gamma_2$
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*Intention to treat: trainings and aspirational videos*

We will also estimate the following equation to differentiate the impact of videos by type of training.

$$Y_{it} = \alpha + \gamma_1 T_{1it} + \gamma_2 T_{2it} + \gamma_3 T_{1it} V_{1it} + \gamma_4 T_{2it} V_{1it} + \gamma_5 T_{1it} V_{2it} + \gamma_6 T_{2it} V_{2it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (4)$$

In which:

- $Y_{i0}$  is the outcome of interest for individual  $i$  at baseline
- $Y_{it}$  is the outcome of interest for individual  $i$  at midline ( $t=1$ ) or at endline ( $t=2$ )
- $T_{1it}$  is the indicator of inter-personal SES training, equal to 1 when the individual was invited to participate in the interpersonal SES training, in addition to the life skills, numeracy and business training, and in-person coaching
- $T_{2it}$  is the indicator of intrapersonal SES training, equal to 1 when the individual was invited to participate in the intrapersonal SES training, in addition to the life skills, numeracy and business training, and in-person coaching
- $V_{1it}$  is the indicator of aspirational video 1, equal to 1 when the individual had access to aspirational video 1
- $V_{2it}$  is the indicator of aspirational video 2, equal to 1 when the individual had access to aspirational video 2
- $X_{it}$  is a list of controls, including strata (implementation areas/communes, gender and training path)
- $\delta_t$  is a dummy for each cohort.

This regression will be run twice, once using midline data and once again using endline data. We will also test pooling together midline and endline data, controlling for a survey dummy. In a further specification, all treatment variables will be interacted with this survey dummy, to test for the sustainability of impact.

Interpretation:

Hypothesis	Test
Aspirational video 1 has an additional and positive impact on outcomes compared to training only.	$H_0: \gamma_3 \leq 0$ or $\gamma_4 \leq 0$
Aspirational video 2 has an additional and positive impact on outcomes compared to training only.	$H_0: \gamma_5 \leq 0$ or $\gamma_6 \leq 0$

Different aspirational videos have different impacts.	$H_0: \gamma_3 = \gamma_5 \text{ and } \gamma_4 = \gamma_6$
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### Treatment on the treated

The previous specifications (2) to (4) estimate the intention-to-treat estimate (ITT). However, there is a concern about respecting treatment assignment. Individuals may enroll in the training but may not actually complete it or follow enough courses. This is particularly worrisome since the population treated is young and has many competing obligations. The training also uses e-learning, which may lead to a higher dropout rate. To take this into account, we will also estimate the treatment on the treated (ToT) for each specific training arm. To do so, we will estimate the following 2SLS regressions, using the random assignment to each training arm as an instrument for the actual participation to the training. The first stage, run for each treatment arm, is:

$$P_{ji} = \alpha + \gamma_1 T_{ji} + \lambda X_i + \varepsilon_{it} \quad (5)$$

Where  $P_{ji}$  is a binary variable indicating whether individual  $i$  has completed training type  $j$  and  $T_{ji}$  is the binary variable indicating whether the individual was randomly assigned to treatment  $j$ . A participant is considered to have completed training when she completes 7 out of 10 modules of the foundational training. We choose the same threshold as the program does to identify participants to be contacted for the monitoring survey. As a robustness check, we will use an alternative variable where training completion is defined as completing all 10 modules. The second stage will use the estimates of participation to capture the impact of the specific trainings on different types of outcomes, using the same specifications as the ones used for the ITT analysis. The estimates on the participation variable capture the impact of the training on those who complied to the treatment and who completed the assigned training.

### b. Heterogeneity

Another important aspect of this study is to analyze how training programs can best benefit women. We expect the impact of treatment will vary across gender as women may lack different socio-emotional skills than men. In order to test whether or not this is true, we run the same regressions as above interacting treatment indicators with an indicator variable for the gender of the respondent:

$$Y_{it} = \alpha + \gamma_1 W_{it} + \gamma_2 T_{1it} + \gamma_3 T_{2it} + \psi_1 T_{1it} W_{it} + \psi_2 T_{2it} W_{it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (6)$$

$$Y_{it} = \alpha + \gamma_1 W_{it} + \gamma_2 V_{1it} + \gamma_3 V_{2it} + \psi_1 V_{1it} W_{it} + \psi_2 V_{2it} W_{it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (7)$$

$$Y_{it} = \alpha + \gamma_1 W_{it} + \gamma_2 T_{1it} + \gamma_3 T_{2it} + \gamma_4 T_{1it} V_{1it} + \gamma_5 T_{2it} V_{1it} + \gamma_6 T_{1it} V_{2it} + \gamma_7 T_{2it} V_{2it} + \psi_1 T_{1it} V_{1it} W_{it} + \psi_2 T_{2it} V_{1it} W_{it} + \psi_3 T_{1it} V_{2it} W_{it} + \psi_4 T_{2it} V_{2it} W_{it} + \mu Y_{i0} + \lambda X_{it} + \delta_t + \varepsilon_{it} \quad (8)$$

With  $W_{it}$  equal to 1 if the respondent is a woman. If the training has the same impact on men as it has on women, none of the interaction coefficients will be statistically significant.

However, if women benefit more from inter-personal SES training than men, we expect the coefficients  $\psi_1$ ,  $\psi_2$ ,  $\psi_3$ ,  $\psi_4$  to be positive and statistically significant.

We will also estimate the interactions of the treatment with other stratification variables, namely the training track chosen at baseline (energy, retail, information, or communication technology), implementation areas/communes. While we expect variation, we do not have strong reason to suggest the way they will vary.

### c. Mechanisms: theory of change

#### i. Impact of the core training on labor outcomes

The training offers business training and coaching to participants. The program is aimed to:

- i. Increase the participants' skills including technical skills such as numeracy, making them more attractive to employers or improving their outcomes as self-employers.
- ii. Boost motivation to apply and participate in labor market or increase self-employment opportunities by actively coaching individuals.

The effect is supposed to be stronger for women, who start off with lower levels of technical skills, and so will benefit more from the program.

#### ii. Impact of socio-emotional training on participants' labor outcomes

SES trainings are meant to improve the participants' "soft" skills. Both interpersonal and intrapersonal skills are necessary for working either in salary employment or in self-employment. We therefore expect both trainings to increase labor market outcomes by either making the participant more attractive to employers or better at creating and managing a business. However, they different SES trainings may have different outcomes:

- i. Intrapersonal skills will improve the participants' ability to concentrate and to motivate themselves.
- ii. Interpersonal skills will improve the participant's ability to handle conflict with others, to listen and collaborate in teamwork, and to assert themselves.

The different trainings are expected to increase labor market outcomes through either interpersonal or intrapersonal skills.

#### iii. Impact of aspirational videos on labor market outcomes

While the SES training is expected to be beneficial for participants' labor market outcomes, the participants still need to engage invest themselves both during training and in securing rewarding jobs. They may be constrained by low expectations about their ability to secure such positions. This may be especially the case for women, who may have lower occupational aspirations to start with, compared to men. Aspirational videos can change the participants' expectations about what employment they may be able to secure after the training and should magnify the impact of the SES training

#### iv. Impact of socio-emotional training on additional hypothesized outcomes

Developing technical skills and SES are particularly important for women. Indeed, such skills, in addition to improving women's employment prospects and more broadly their economic well-being, may also impact young women's sexual and reproductive health behaviors through: (i) increase in health-related life skills and in the use of contraception; (ii) changes in preferences for early marriage and childbearing, and changes in aspirations; and (iii) increasing self-confidence and decision-making power, which allow young women to negotiate the timing of marriage and childbearing as well as contraceptive use with their family members and husband. For instance, providing employment support services to women is hypothesized to lead to an increase in labor market participation, increasing earnings and savings. Higher earnings and increased engagement in the labor market can increase women's decision making power as well as increasing the opportunity cost of early childbearing and early marriage. The ELA intervention in Uganda achieved strong improvements along both economic (72% and 41% increase in self-employment and monthly consumption expenditures, respectively) and sexual and reproductive health dimensions: teen pregnancy fell by 26% and early entry into marriage or cohabitation fell by 58% (Bandiera et al., 2014). The BALIKA program for girls ages 12 to 18 in Bangladesh also managed to reduce early marriage rates concomitantly with increasing school attendance (for girls in schools) and the likelihood of being engaged in income-generating activities (Amin et al., 2016).

#### d. Outcome measures

##### Labor market outcomes

- Participation in the labor force:
  - **Main measure:** *worked\_30d* = indicator variable equal to 1 if the respondent has worked in the past 30 days.
  - **Other measures:**
    - *worked\_7d* = indicator variable equal to 1 if the respondent has worked in the past 7 days.
- Type of employment:
  - **Main measure 1:** *salaried\_emp* = indicator variable equal to 1 if the respondent has at least one activity as a salaried employee.
  - **Main measure 2:** *self\_emp* = indicator variable equal to 1 if the respondent has at least one self-employed activity.
- Labor quantity:
  - **Main measure:** *total\_working\_hours* = total working hours in a typical month. This equals 0 if the respondent does not usually work.
- Income:
  - **Main measure:** *income\_130days* = total income earned in the past 30 days. This equals 0 if the respondent does not have an income-generating activity.

- **Other measures:**
  - *income\_daily* = income earned in a typical working day (this equals the total income multiplied by 8 - assuming one works 8 hours a day - divided by the total working hours).
- Profits:
  - **Main measure:** *profit\_130days* = profits generated in the last 30 days from self-employed activities. This equals 0 if the respondent is not self-employed.
  - **Other measures:**
    - *profit\_main* = profits generated by the highest-paying self-employed activity in the last 30 days. This equals zero if the respondent is not self-employed.
- Job search:
  - **Main measure:** *jobS\_130days* = indicator variable equal to 1 if the respondent has looked for work in the past 30 days.
  - **Other measures:**
    - *jobapp\_130days* = Number of job applications submitted by the respondent in the past 30 days.
    - *jobS\_hours\_17days* = Number of hours spent looking for work in the past 7 days.

#### Empowerment and aspirations

- Decision-making within the household:
  - **Main measure 1:** *decision\_belief* = index of the respondent's belief about her decision-making ability. This is the sum of a score of the respondent's independence in making decisions within the household (ranging from 0 to 3) for several decisions. The index is then standardized to make comparisons easier between different indexes. The decisions are about the participant's ability to choose for:
    - Entrepreneurial activities.
    - Employment and earnings.
    - Buying durable goods or exceptional spending of the household.
    - Day-to-day spending.
    - Handling serious health problems.
    - Time use.
    - Borrowing money.
    - Investing money in a future business.
    - Saving money.
  - **Main measure 2:** *decision\_participation* = index of the respondent's decision-making ability. This is the sum of a score of the respondent's participation in making decisions within the household (ranging from 0 to 3) for several decisions. The index is then standardized to make comparisons easier between

different indexes. The decisions are about the participant's ability to choose for the same areas as in *decision\_belief*.

- Gender equality:
  - **Main measure:** *gender\_equality* = index of gender equality. This is the sum of scores, ranging from 0 to 3, for 4 different questions about attitudes towards gender equality. The index is then standardized to facilitate comparisons. The attitudes are:
    - Differences in men's and women's abilities.
    - Men better handle hard situations compared to women.
    - Women's main role is to take care of the home and cooking.
    - Household spending is the role of the husband, even if his wife can help him.
  - **Other measures:**
    - *min\_domestic\_tasks* = number of minutes spent on domestic tasks in a day.
    - *min\_work* = number of minutes spent working in a day.
- Aspirations and life satisfaction:
  - **Main measure:** *earn\_asp\_10y* = monthly earnings which the respondent aspires to in ten years.
  - **Other measures:**
    - *earn\_expect\_10y* = monthly earnings the respondent expects to receive in ten years.
    - *life\_satisf\_5y* = life satisfaction in 5 years, ranked from 1 to 10.
    - *business\_project\_6m* = indicator variable equal to 1 if the respondent wants to start a new business in the next 6 months.
- Gender-based violence:
  - **Main measure of attitudes:** *gbv\_attitudes* = indicator variable equal to 1 if the respondent believes that a husband is justified to hit his wife in any of the following situations:
    - She burns the food.
    - She argues with him.
    - She goes out without telling him.
    - She neglects the children.
    - She refuses to have sexual intercourse with him.
    - She talks about protecting herself against AIDS.
  - **Main measure of experience:** *gbv\_any* = indicator variable equal to 1 if the female respondent has been a victim of gender-based violence in the past 6 months (only asked for women and for the first and third cohort).
  - **Other measures:**
    - *gbv\_emotion* = indicator variable equal to 1 if the female respondent has been a victim of emotional gender-based violence in the past 6 months.

- *gbv\_physical* = indicator variable equal to 1 if the female respondent has been a victim of physical gender-based violence in the past 6 months.
- *gbv\_sex* = indicator variable equal to 1 if the female respondent has been a victim of sexual gender-based violence in the past 6 months.
- *gbv\_phys\_sex* = indicator variable equal to 1 if the female respondent has been a victim of physical and/or sexual gender-based violence in the past 6 months.
- *gbv\_work* = indicator variable equal to 1 if the female respondent has been a victim of any gender-based violence in the past 6 months from people she works with/for.
- *gbv\_family* = indicator variable equal to 1 if the female respondent has been a victim of any gender-based violence in the past 6 months from family members or friends.

#### Socio-emotional skills

Socio-emotional skills are measured in two different ways:

1. **Subjective measures** based on the assessment of the respondent: the respondents are all asked about several statements capturing different SES. They can say whether they strongly disagree, disagree, neither agree nor disagree, agree, strongly agree with each statement.
2. **Alternative measures:** respondents are asked about hypothetical situations and must answer how they would behave (saying if it is likely or unlikely that they behave in a given manner).

The measures will capture several SES, both interpersonal and intrapersonal measures. All in all, there are 12 different measures of SES: Self-awareness, Emotion regulation, Perseverance, Personal Initiative, Decision-making and problem-solving, Creativity, Generalized self-efficacy, Empathy, Expressiveness, Interpersonal influence, Negotiation and Collaboration. We use principal component analysis to obtain factor score(s) for each SES. The main measure will be the alternative measure whenever available, subjective otherwise. For skills captured both by a subjective measure and an alternative measure, we will use the subjective measure as a robustness check.

- **Main measure for intrapersonal skills:** we will use an aggregate of the 7 skills listed below.
- **Main measure for interpersonal skills:** we will use an aggregate of the 5 skills listed below.
- **Other measures:** 12 disaggregated skills as listed below.

For intrapersonal skills, there are 7 different measures:



- **Self-awareness:** *s1\_sr\_score2* = principal component score of a subjective measure of self-awareness. The variable is standardized.
- **Emotional regulation:** *s2\_sr\_score2* = principal component score of a subjective measure of emotional regulation. The variable is standardized.
- **Perseverance:** *s3\_sr\_score2* = principal component score of a subjective measure of perseverance. The variable is standardized.
- **Personal initiative:** *s4\_sr\_score2* = principal component score of a subjective measure of personal initiative. The variable is standardized.
- **Decision-making and problem-solving:** *s5\_sr\_score2* = principal component score of a subjective measure of problem solving and decision making. The variable is standardized.
- **Creativity:** *s6\_sr\_score2* = principal component score of a subjective measure of creativity. The variable is standardized.
- **Generalized self-efficacy:** *s7\_sr\_score2* = principal component score of a subjective measure of generalized self-efficacy. The variable is standardized.

For interpersonal skills, there are 5 different measures:

- **Empathy:** *s8\_sr\_score2* = principal component score of a subjective measure of empathy. The variable is standardized.
- **Expressiveness:** *s9\_sr\_score2* = principal component score of a subjective measure of expressiveness. The variable is standardized.
- **Interpersonal influence:** *s10\_sr\_score2* = principal component score of a subjective measure of influence. The variable is standardized.
- **Negotiation:** *s11\_sr\_score2* = principal component score of a subjective measure of negotiation. The variable is standardized.
- **Collaboration:** *s12\_sr\_score2* = principal component score of a subjective measure of collaboration. The variable is standardized.

Social desirability variables will be used as controls in regressions on socio-emotional skills.

#### e. Secondary measures

In addition to the outcomes mentioned above, we will also look into secondary outcomes that are expected to be impacted by the training:

- Expenditures:
  - **Main measure:** *total\_exp*: total expenditures of the respondent in US dollars.
  - **Other measures:**
    - *noness\_exp* = value of non-essential expenditures (tobacco, entertainment, clothing and beauty products)
    - *edu\_exp* = value of education-related expenditures
- Savings:
  - **Main measure:** *total\_savings*: total savings of the respondent in US dollars.
  - **Other measure:**

- *savings*: indicator variable equal to 1 if the respondent has any savings.
- Assets:
  - **Main measure:** *asset\_index\_hh*: index of the number of assets owned by the household. It corresponds to the sum of the household's domestic goods. These goods include mattress, bicycles, moto, phones, radios, TV, sprayers. The index is standardized, with mean 0 and standard deviation 1.
- Credit:
  - **Main measure:** *access\_credit*: indicator variable equal to 1 if the respondent has the ability to take out a loan.
  - **Other measures:**
    - *value\_credit* = value of loans, equal to 0 if the respondent does not have any loans.
    - *bank\_account* = indicator variable equal to 1 if the respondent has a bank account in their name.
    - *value\_credit\_6m* = total value of loans contracted within the last 6 months.
    - *value\_credit\_business* = total value of loans contracted for business purposes.
    - *access\_funds* = indicator variable equal to 1 if the respondent can raise 200,000 FCFA within a month.
- Investment:
  - **Main measure:** *value\_assets\_busi*: value of acquired assets for business in the past 12 months
- Network:
  - **Main measure:** *network\_size*: size of the respondent's network.
  - **Other measures:**
    - *network\_not\_zero*: indicator variable equal to 1 if the respondent has at least one person with whom they can talk business or employment opportunities with.
    - *network\_business*: indicator variable equal to 1 if the respondent has talked about business opportunities in the past 30 days.
    - *network\_employment*: indicator variable equal to 1 if the respondent has talked about employment opportunities in the past 30 days.
    - *network\_finance*: indicator variable equal to 1 if the respondent has talked about financing opportunities in the past 30 days.
    - *role\_model* = indicator variable equal to 1 if the respondent knows someone who is professionally successful.
    - *work\_advice* = indicator variable if the respondent knows someone who can give her business or work advice.
- Sexual and reproductive health:
  - **Main measure:** *contra\_last* = indicator variable equal to 1 if the respondent used any modern contraceptive method during the last sexual intercourse.
  - **Other measures:**

- *contra\_nocond\_last* = indicator variable equal to 1 if the respondent used any modern contraceptive other than a condom during the last sexual intercourse.
  - *contra\_usual* = indicator variable equal to 1 if the respondent usually uses some type of modern contraceptive method during sexual intercourse.
  - *contra\_nocond\_usual* = indicator variable equal to 1 if the respondent usually uses a modern contraceptive method other than a condom during sexual intercourse.
  - *contra\_decision* = index of the respondent's decision-making ability on reproductive issues. The index is standardized, with mean 0 and standard deviation 1.
  - *transactional\_sex* = indicator variable equal to 1 if the respondent has received money, gifts or services in exchange for sex in the last 6 months.
- Gender norms:
  - **Main measure:** *women\_empwr* = index of the respondent's belief about the decision-making ability of women in her community. This is the sum of a score of the respondent's belief about women making decisions within the household (ranging from 0 to 3) for several decisions. The index is then standardized to make comparisons easier between different indexes. The decisions are about the women's ability to choose for:
    - Entrepreneurial activities.
    - Employment and earnings.
    - Buying durable goods or exceptional spending of the household.
    - Day-to-day spending.
    - Handling serious health problems.
    - Time use.
    - Borrowing money.
    - Investing money in a future business.
    - Saving money.
  - **Other measures:**
    - *desc\_utilities\_norm* = share of married women in the respondent's community who contribute to the cost of utilities.
    - *inj\_utilities\_norm* = share of women in the respondent's community who believe married women should contribute to the cost of utilities.
    - *inj\_domestic\_norm* = share of people in the respondent's community who believe married women should not receive help from their husbands for domestic duties.
    - *business\_norm* = index of the respondent's belief on the support he would receive when launching his own business. The index is standardized, with mean 0 and standard deviation 1.

- Self-employment characteristics:
  - **Main measure:** *self\_bp* = indicator variable equal to 1 if the self-employed respondent follows a business plan.
  - **Other measures:**
    - *self\_fte* = number of full-time equivalents the respondent employs in his business.
    - *self\_support* = indicator variable equal to 1 if the self-employed respondent received support from family and friend to start his business
- Fertility and marriage aspirations:
  - **Main measure:** *married\_early* = indicator variable equal to 1 if the respondent is married.
    - *expect\_firstchild* = age at which the respondent expects to have his first child.
  - 
  - **Other measures:**
    - *n\_children* = number of biological children.
    - *n\_respchildren* = number of children the respondent is in charge of.
    - *age\_firstchild* = age of the respondent when he had his first child.

#### f. Outliers

Outliers often arise in the distribution of monetary values such as revenue and savings. Our approach will be to winsorize at the appropriate percentile based on the distribution of the outcomes. We will also rely on an inverse sine hyperbolic transformation (ISTH)<sup>1</sup> to approximate a log specification without dropping the zeroes, as is common in the literature with wealth and income data (see Callen et al. 2019, Dupas, 2018).

The following variables will be winsorized or transformed:

- *total\_working\_hours*: total working hours in a typical month
- *income\_130days*: Total income earned in the past 30 days
- *income\_daily*: Income earned in a typical working day
- *profit\_130days*: Profits generated in the last 30 days from self-employed activities
- *profit\_main*: Profits generated by the highest-paying self-employed activity
- *min\_domestic\_tasks*: number of minutes spent on domestic tasks in a day
- *earn\_asp\_10y* = monthly earnings which the respondent aspires to in ten years.
- *total\_exp*: Total expenditures of the respondent in US dollars
- *total\_savings*: Total savings of the respondent in US dollars
- *value\_credits*: Value of loans
- *value\_assets\_busi*: Value of acquired assets for business in the past 12 months

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<sup>1</sup>  $\log(y_i + (y_i^2 + 1)^{1/2})$

## 4. Robustness checks and potential issues

### a. Attrition

A potential concern is attrition, especially at endline given that it happens 2 years after the baseline, and that the sample population is likely to be very mobile. We will therefore check whether there are different attrition rates between different groups. To do so, we will run the following regression for both midline and endline measures:

$$attrition_{it} = \alpha_0 + \alpha_1 T_{it} + \varepsilon_{it}$$

Where attrition is a binary variable equal to 1 if individual  $i$  in cohort  $t$  is missing. If the attrition rates differ across groups, we will use either Lee bounds and/or inverse probability weighing.

### b. Respect of treatment and take-up

Re-applicants will have the same probability as first-time applicants of being selected: a probability of 45% at most, since for each cohort the number of individuals selected in the sample should be 2.2 times the program's capacity. The re-assignment of some individuals from control to treatment could introduce a bias in the estimates of the training's effects, especially since individuals who choose to re-apply are likely to be different from non-re-applicants. To prevent this bias, we will control for re-applicant status. Moreover, most re-applicants will remain in the control group, and we will be able to observe the differences between them and non-reapplicants.

### c. Dealing with multiple outcomes

The main objective is to limit Type I error (false positive or false discovery).

To do so, we kept only one main outcome per family of outcomes (participation in the labor force, labor quantity, income, profits, decision-making, gender equality, aspirations, gender-based violence, socio-emotional skills). We plan on running robustness checks using additional measures for each one of our core outcomes.

Additionally, to be able to look at a larger range of outcomes while limiting false discoveries, we will rely as much as possible on summary indices. These summary indices will provide a single outcome measure per family of outcomes. We will thus follow the methodology of Kling, Katz and Liebman (2007) to test the significance of families of outcomes in a single aggregate. For each family of outcomes described above, we will:

- 1) Convert all outcomes so that the sign of all of the variables in a family goes in the same direction

2) Calculate the z-score of each variable by subtracting the control group mean and dividing by the control group standard deviation

3) Take an average of the z-scores in the family

In addition, when considering the heterogeneity of outcomes, we will follow the recommendations of Fink, McConnell and Vollmer (2012) and use the Benjamini and Hochberg (1995) method for limiting the false discovery rate (FDR).

## 5. Take-up intervention

In the context of the same program, an additional experiment will look at whether sending information about the benefits of the program to potential applicants can increase take-up.

### a. Sample selection

Sample selection for the take-up experiment is organized within the overall sample selection for the training treatment.

The project targets young people aged 15 to 30 in Abidjan and Grand Bassam in Cote d'Ivoire. Recruitment to the Pro-Jeunes program is done in three stages: (i) interested young people first register and express their interest to the program; (ii) after screening all the applications, the project team call the eligible candidates to give them more information about the program and confirm their interest in participating; (iii) eligible applicants who have confirmed their interest in participating to the program during stage (ii) are then invited to come to an "enrollment meeting". Recruitment is done either by program staff directly on the street, or people interested in the program can apply in application centers where they will fill an application form and provide information about their motivation to participate in the program and some credentials.

Sample selection for the take-up experiment takes place between the first and second steps of the recruitment, i.e. after young people have registered their interest but before they have applied. This experiment is conducted on the first cohort only. In total, 4,427 young people were selected from a sample of 7,926 people.

### b. Experiment design

There are several arms to the RCT. The first arm is to analyze the impact on information on take-up of the training. This is done between step 1 and 2, so after individuals have expressed interest in the training and given their name and phone numbers, but before they have enrolled.

Eligible applicants to the Pro-Jeunes program will be randomly assigned to receive a text message reminding them to enroll in the program. Contents of the SMS will randomly vary. There will be two templates of SMS messages. Both will insist on the cost-benefits of the program, mainly that the program is free. However, one message will include “immediate benefits” while the other will contain “future benefits” arguments. For each of these treatment groups, they will be further divided into two treatment groups, one where only the young people are contacted while the other sends a message to both the young person and a contact that they provided.

The randomization is summarized in the table below:

	<b>Control</b>	<b>T1</b>	<b>T2</b>	<b>T3</b>	<b>T4</b>
<b>SMS to parents, friends, or relatives</b>			•		•
<b>Emphasis current benefits</b>		•	•		
<b>Emphasis on future benefits</b>				•	•

The randomization will be stratified by gender, implementation areas/communes and by expressed preferences for program/training track (Energy, Retail, ICT, or salaried work).