HARD AND SOFT SKILLS IN VOCATIONAL TRAINING:
EXPERIMENTAL EVIDENCE FROM COLOMBIA

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ABSTRACT

We randomly assign applicants to over-subscribed programs to study the effects of teaching hard and soft skills in vocational training and examine their impacts on skills and labor market outcomes using both survey and administrative data. We find that providing vocational training that either emphasizes social or technical skills increases formal employment. We also find that admission to a vocational program that emphasizes technical relative to social skills increases overall employment and also days and hours worked in the short term. Yet, emphasis on soft-skills training helps applicants sustain employment and monthly wages over the longer term and allows them to catch up with those learning hard skills. Further, through a second round of randomization, we find that offering financial support for transportation and food increases the effectiveness of the program, indicating that resource constraints may be an obstacle for individuals considering vocational training.

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1 Introduction

Vocational training programs are often seen as a means to improve the transition between formal schooling and employment. However, the extent to which vocational training programs succeed in improving the labor market outcomes of their participants is highly debated – and empirical evaluations of vocational programs report mixed results. While some programs suggest positive and sustained impacts (Kugler et al., 2022; Silliman and Virtanen, 2019; Brunner et al., 2019; Chakravarty et al., 2019; Attanasio et al., 2017; Diaz and Rosas, 2016; Reis, 2015; Attanasio, Kugler and Meghir, 2011), others report few or no effects (Alfonsi et al., 2020; Maitra and Mani, 2017; Hicks et al., 2013; Card et al., 2011; Galasso et al., 2004).[1] Moreover, even the positive effects of some vocational programs that succeed in improving labor market outcomes in the short term can dissipate in only a few years (Acevedo et al., 2020; Alzua et al., 2016; Hirshleifer et al., 2016). A common explanation for this fadeout is that the later outcomes of vocational trainees may suffer if the narrow training they receive does not provide them the skills to adapt to changes in the nature of work and hold on to their jobs (Heinrich and Houseman, 2020; Hanushek et al., 2017; Krueger and Kumar, 2004).

In this paper, we use a randomized experiment to study whether vocational training programs can be designed to provide their participants with sustained benefits by exogenously varying the technical and social skills provided in the program. Building off recent work highlighting the importance of social skills in adapting to changes in the labor-market (Deming, 2017) and allowing people to better hold on to their jobs (Heinrich and Houseman, 2020), we randomize applicants to over-subscribed vocational training programs in Cali, Colombia to various treatment arms as follows. First, we randomly assign applicants to either receive vocational training or not. Then, within particular vocational programs, we randomly assign applicants to programs with varying degrees of training in technical and social skills. We assess the effects of providing social and technical training in vocational programs by tracking applicants through both an extensive array of survey data and data on labor market outcomes from social security administrative records.

By randomly assigning curricular content within otherwise comparable vocational training programs, our study is among the first —to the best of our knowledge— to explicitly address how curricular content in vocational training affects labor market performance. While a number of studies focus on policy-changes to offer some insight into the potential effects of changes in vocational curricula (e.g., Bertrand et al., 2019; Hall, 2016; and Malamud and Pop-Eleches, 2010), any effects identified by these non-experimental studies might be partly driven by changes in the composition of students entering vocational training.[2] Further, com-

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[1]See McKenzie (2017) for an overview of training programs in developing countries.

[2]Meer (2007) notes that selection into vocational programs or tracks make it challenging to interpet

parisons between cohorts are challenging, because, as Field et al. (2019) observe, vocational graduates are particularly sensitive to changes in initial local labor market conditions due to business cycle fluctuations. There are few randomized trials that examine the impacts of soft skills. While Adhvaryu et al., (2018) find positive effects of a soft-skills training program on the wages of garment workers in India, Groh et al. (2016) find no effects of soft skills training for female community college women graduates in Jordan. Acevedo et al. (2020) and Ibarran et al. (2014) both examine the impact of combining soft skills with internships in the Dominican Republic and find positive short-term effects but only for women.[3]

In the aggregate, our results show that admission to vocational training through random assignment increases formal employment (8-14 p.p.) in both the social and technical treatment arms and for both men and women. These effects are robust to a number of specifications and they are present regardless of whether we use our own survey or administrative measures of employment. We also see substantial increases in monthly wages in our administrative data (21 USD).[4] Our cost effectiveness estimates based on these estimates suggest that the program pays for itself in about eight months.

Next, we test for differences between the effects of the social and technical vocational training programs on labor-market outcomes. Our analysis highlights two findings. First, the initial benefits of vocational training are smaller for those randomly assigned to social skills training than for those assigned to the technical training program. Second, we find that despite the smaller initial premium to the training program emphasizing social skills, those exposed to the social skills training eventually catch up to their technical program counterparts between six to 12 months after finishing the program.

Additionally, we attempt to shed light on the role of specific dimensions of social skills in explaining the effects these effects of vocational training. Our results suggest that, in aggregate, both programs improve organizational (0.06 SD) and communication skills (0.08 SD); effects on other social skills are generally positive, but less precise. Moreover, we see that applicants assigned to the training emphasizing social skills experience larger gains in communication skills (0.12 SD). Additionally, our analysis of labor-market outcomes over time suggests results in line with the theory that social skills may help individuals better hold on to their jobs.[5]

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descriptive differences in outcomes between graduates of different programs as causal.

[3]This study offers two treatment arms, one that combines soft skills training and the internship, and one that also adds vocational skills training to the soft skills training and internship. Unfortunately, this study does not allow disentangling the effect of soft skills from that of the internships. While both papers listed study the same program, Acevedo et al. (2020) extend the analysis to include labor market outcomes.

[4]Our survey data suggests smaller increases in monthly wages, but as we show, this may be due to the exceptionally low labor-force participation in February 2019.

[5]Part of the reason for imprecise estimates in other areas of social skills may stem from our inability to

Through a further treatment arm that randomizes stipend receipt, we study the potential role of resource constraints as barriers to participation in vocational training. We find that applicants randomized to receive stipends experience a bigger effect of vocational training on employment than those without stipends. We also examine the heterogeneity of our results and find that the benefits of vocational training accrue largely to men in terms of the probability of getting a job but that women also benefit similarly to men in terms of increased formality and hours and days worked. This suggests that skills alone may be insufficient for helping women to overcome other barriers to employment such as lack of access to childcare.

The aggregate results from our study are in line with previous studies from Colombia, the Dominican Republic, and Mongolia, which suggest that vocational programs can improve labor market outcomes in the short term (Field et al., 2019; Acevedo et al., 2020; Attanasio, Kugler and Meghir, 2011). Moreover, Kugler et al. (2022) and Attanasio et al. (2017), who are able to follow their sample for up to 10 years through administrative data, find that the initial benefits of vocational training in Colombia may persist in terms of labor market outcomes into the longer-term.[6]

Furthermore, our study advances the knowledge on the ongoing debate in the literature on vocational training by building on insights from economic theory. A common view suggests that general (vs. specific) skills are important in providing individuals with the flexibility to adapt to changes in the demands of the labor market (Deming and Noray, 2018; Deming, 2017; Goos et al., 2014; Acemoglu and Autor, 2011; and Goldin and Katz, 2009). Applying this view to the context of vocational education, some scholars have argued that any initial benefits of vocational education, which tends to emphasize technical education specific to a trade, are likely to disappear with time (Alfonsi et al., 2020; Hampf and Woessmann, 2017; Hanushek et al., 2017; and Heckman and Krueger, 2005; and Krueger and Kumar, 2004).

By randomly assigning applicants to intensive vocational training programs emphasizing either technical or soft skills, we directly investigate how labor market dynamics are affected by the extent to which vocational curricula include social skills, which are likely to be a particularly important form of general skills (Deming, 2017). Comparing vocational programs that differ only in the degree to which they include social skills, our study builds on the few studies that evaluate vocational programs with components related to social skills (Acevedo

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sufficiently discriminate between small differences in social skills, as indicated by our IRT analysis. This difficulty may be further exacerbated by the fact that the two types of vocational training programs both include teaching in hard and soft skills. Likewise, since the jump in social skills training is not from zero to one-hundred, it is possible that effects on labor market outcomes are explained by complementarities between hard and soft skills.

[6]Our study is based on a different program which includes social skills, and targets an older population, which may explain why we find bigger effects on men than previous evaluations of training programs in Colombia.

et al., 2020; Groh et al., 2016).[7] In line with theory, we see that while those exposed to the program emphasizing technical skills are quicker to find employment, those exposed to the program emphasizing social skills soon catch up, and are slightly more successful in maintaining their jobs. These findings add nuance to the debate of general and specific skills in vocational training, suggesting that technical skills can be helpful in helping people find employment, but social skills may be important in allowing them to maintain their jobs into the longer term.[8] These results may also help to explain why vocational programs that include some training in general skills may succeed in providing long-term benefits (Kugler et al., 2022; Bertrand et al., 2019; and Silliman and Virtanen, 2019).

We also try to understand how social skills training might lead to better labor-market outcomes. Despite the attention labor-economists have shown towards social skills, Gibbs et al. (2011) explain that empirical measures of social skills remain largely elusive, "By process of elimination, researchers typically assume the mediator driving long-term behavioral impacts must be non-academic (that is, socio-emotional and behavioral) skills... These skills currently play the role of what one might call "social policy dark matter.""(pg. 4). Using measures across several dimensions of social skills, we try to unpack this "dark matter".[9] We find that vocational training improves organizational and communication skills, and that the latter improve more for those with greater exposure to social skills training. Importantly, we then find the training translates into better employment outcomes.

The rest of the paper proceeds as follows. In Section 2, we describe the program and the experimental design. In Section 3, we describe both the survey as well as the administrative data we use for our analysis. We present the results in Section 4. We present cost-benefit analysis in Section 5 and conclude in Section 6.

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[7]Acevedo et al., (2020) compare two vocational programs both of which have the same degree of soft skills training, stipends, and internships, but vary in the extent to which they have technical training. Groh et al., (2016) study an intervention which compares the labor market outcomes of public female community college graduates in Jordan who are exposed to either an employment voucher, soft skills through an employability training program, or a combination of the two. Our results contrast with the Acevedo et al.'s (2020) results, which show positive short-term impacts of social skills programs on women, but not in the medium term, and negative impacts on men even in the short term. We instead find positive impacts of vocational and soft skills training on both women and men in the short and medium terms. Our results are also in sharp contrast to Groh et al.'s (2016) results, which show no effects at all of a much shorter soft skills training program in Jordan.

[8]While consistent with theory suggesting sustained returns to general skills, our experimental design does not allow us to directly tease-apart whether these results are due to general skills better allowing individuals to adapt to technical change, or if social skills - either by improving employee-employer relationships or the increased importance of face-to-face encounters - are driving these results.

[9]Non-cognitive skills are first referred to as dark matter by Heckman and Rubinstein (2001).

2   Program Description and Experimental Design

We study applicants to oversubscribed vocational training courses which were part of the Inclusive Employment Program (IEP) offered by the Carvajal Foundation in Cali, Colombia[10] between June and December 2018.[11] In total, 18 classes – each lasting 160 hours – were offered in 8 different areas of the service sector: sales and client services, general services, surveillance and security services, cashiers, quality control assistant, cooking assistant, delivery assistant and storage assistant. The program offered two of each of these types of courses, except for 4 courses in General Services. While one course ended in July and one in August of 2018, the vast majority ended in the Fall of 2018 (4 in September, 2 in October, 8 in November, and 2 in December).[12]

Since all these programs were oversubscribed, applicants were randomly assigned to receive either vocational training versus no training at all (i.e., treatment versus control groups). In a second round of randomization, each applicant admitted to receive vocational training is assigned to a version of the course with either an emphasis on social (Treatment 1) or on technical (Treatment 2) skills. Third, half of those assigned to vocational training were also provided a stipend for transportation and meals. See Figure 1 for a visual depiction of the design of the study.

Participants registered voluntarily into classes in response to a call for registrations by the Carvajal Foundation. The Foundation established this program to help the poorest in the community access jobs. Thus, the foundation reaches broadly to enroll participants through radio, social media, loud-speakers in cars that go through poor neighborhoods, flyers, and through the public employment office[13] and offices that provide other public services to the poor. As reported in the next section, most individuals who registered for these courses were in the lowest socio-economic strata according to the Census of the Poor in Colombia.

Individuals who were interested in registering for the classes attended an informational meeting and registered for the specific classes they wanted to take. Each class had between 23 and 31 spots and registration in each class ranged from 28 to 47 registrations per class. Given over-subscription in the classes, the foundation randomly selected individuals to either receive a spot or not receive a spot in the course. The lotteries for each course were recorded

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[10]Cali is the third largest city in Colombia with 2.2 million people, after the capital, Bogota, with 7.4 million people and Medellin with 2.4 million people.

[11]We partnered with the Carvajal Foundation which run and implemented the program. The Carvajal Foundation is a non-profit foundation devoted to help with social programs in Cali including programs to support entrepreneurship, education initiatives, training, and employment programs.

[12]These courses varied in duration from between 4 and 10 weeks depending on the daily number of hours (between 5 and 8) of training.

[13]The public employment office is a government funded agency which provides intermediation services to the unemployed to help them find jobs.

by video to ensure everyone knew people were allocated into the courses by chance. Those who did not win a spot in the training courses through the lottery were in the control group and were not provided other services by the Carvajal Foundation for an entire year following registration. As shown in the next section, the randomization divided people into groups that were very similar on average in terms of their characteristics, thus giving credibility that the lottery worked well in terms of randomly assigning individuals into and out of the classes. There were initially 663 people who registered in the courses and of these, 451 were randomly assigned to the training and 212 were assigned to the control group.

The next step of the random assignment determined whether individuals admitted to vocational training would attend classes with a greater emphasis in teaching social skills or technical skills. Half of the courses in each area emphasized social skills (Treatment 1: 100 hours social skills, 60 hours technical skills), while the other half emphasized technical skills (Treatment 2: 60 hours of social skills, 100 hours of technical skills).[14] Since there were (at least) two classes in each area (ex. security services), a coin toss determined whether an individual applicant would be admitted to the version of a course with either an emphasis on soft or technical skills. Social workers provided the social skills content of the courses, which included self-esteem, work ethic, organizational skills, inter-personal skills and communication skills. Prior to the experiment, all courses consisted of 40 hours of soft skills; an additional 20 and 60 hours of social skills curricula were developed specifically for the experiment for courses with 60 and 100 hours of social skills training, respectively. While the content was similar, the course with 100 hours of social skills training offered deeper coverage of organizational, teamwork, leadership, communication, and interpersonal skills. The content of the technical skills varied depending on the course (e.g., security and surveillance services, cashiers, or cooking assistant skills). In all cases, the content was specific to a job and the skills were taught both in the classroom as well as through practical hands-on experience in the training center of the Carvajal Foundation. Courses offering 60 hours instead of 100 hours of technical training taught the same content but reduced the number of hours spent in practical hands-on training. Upon completion of the course, there was a graduation ceremony, and students received an informal (not formally recognized) diploma from the Carvajal Foundation in the content area (eg. security services). These diplomas did not specify whether students received the social or technical versions of the courses, and it is unlikely that applicants themselves knew that courses varied by degree of soft versus hard skills. In total, there were 222 individuals assigned to training with greater emphasis on social skills and 229 assigned to training with greater emphasis on technical

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[14]The weekly hours in each course ranged between 30 and 60 hours, which meant that courses lasted between about 3 and 5 weeks.

skills.

The last step of the randomization involved either offering or not offering a stipend to participants. The monetary stipend consisted of US$1.50 per day. This monetary transfer was meant to help participants cover the costs of transportation and meals while taking the courses. The offer of a stipend was randomized at the class level to avoid envious comparisons among participants in the same course. The stipend was paid at the end of the week for the entire week to ensure that participants attended the classes each day of that week before receiving the payment. A toss of a coin determined which classes received (or did not receive) the stipends.

3   Data Description

3.1   Survey Data

We track our sample through survey and administrative data. We collected data on both treatment and control individuals and their families by conducting our own pre-treatment surveys. Further, we collected information on labor market characteristics and social skills in the pre-treatment surveys. Importantly, these pre-treatment surveys were conducted in November 2017, before people found out if they were randomly assigned into or out of the program. We, then, collected information between March and April of 2019 using a reference period of February 2019 for all labor market questions and a reference period of March and April 2019 for social skills questions for both treatment and control individuals after the courses had concluded.

Table 1 shows covariate balance checks between applicants assigned to treatment and control groups. The first column shows descriptive statistics for the control group, while the second column shows the difference in characteristics between the treatment and control groups. Sixty six percent of control group individuals are women. They are on average 26 years old and have 11 years of education. Ninety nine percent have an elementary school and 94% secondary school education and 29% have technical higher education. Most individuals, 55%, are Afro-Colombians and 17% report being Mestizo. Control group households are relatively poor with an average household income of US$19.23/day and an average household size of 4.45 individuals. Importantly, Column 2 shows that treatment individuals are very similar to control group individuals in terms of all their characteristics. None of the treatment-control differences are individually or jointly significant (the F-test is 0.50). Further, since the administrative data cannot be linked to course fixed effects, we include a

second test of balance between treatment and control groups without the inclusion of course fixed effects (Table A.1., Columm 2, F-test is 0.59).

We also check that the characteristics between the control and treatment groups are similar for each treatment arm. Columns 3 and 4 report the treatment-control differences for Treatment 1 (with emphasis on social skills training) and for Treatment 2 (with emphasis on technical skills training), respectively. Column 3 shows that the only difference between Treatment 1 and the control group is the household size, which is slightly bigger for those in the treatment. However, the test of joint significance of all characteristics yields an F-test of 0.94 and a p-value of 0.53, showing that these are not jointly significantly different between the social skills treatment and the control group. Similarly, Column 4 shows that Treatment 2 and the control do not differ across any observed covariate. The joint significance test shows that the differences of all the characteristics are not jointly significant (F-test is 0.60 and p-value 0.89). We conduct further tests for balance across treatment arms in Columns 3 and 4 of Table A.1. These tests suggest little evidence of imbalance between the those randomly assigned to the technical versus social training program (Column 3, F-test is 1.34) or for people randomized into and out of stipend receipt (Column 4, F-test is 1.21).

Table 2 reports pre-treatment differences between the treatment and control groups in terms of labor market and social skills outcomes in May of 2018, before any of the courses started. As with other pre-treatment characteristics, we conduct a balancing test for indicators of employment, whether the worker has a contract, and whether the worker is a causal worker (Panel A). We also include balancing tests of days worked per month and hours worked per week as well as wages per hour and monthly earnings. The control group means in Column 1 show that 55% were employed, but only 28% had a written contract. Control group individuals worked only 13.5 days per month and 24.5 hours a week.[15] Not only did they not work full time, but also their wages were very low, only US \$1.20/hour. Column 2 shows that the treatment group was very similar. In fact, none of these variables are significantly different between treatment and control group individuals. Likewise, the differences between the control and each of the treatment arms are also insignificant for nearly all labor market outcomes.

Panel B of Table 2 reports measures of soft skills at baseline. These index measures are aggregated from items collected by the Carvajal foundation, using a measurement instrument they had used internally in prior work. This instrument contains several questions across multiple dimensions of soft skills — work ethic and responsibility, interpersonal skills and ability to get along with others, leadership skills, teamwork and communication skills. The

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[15]Note that employment numbers are somewhat higher than in other training experiments in Colombia focused on younger populations (Attanasio et al., 2011; Kugler et al., 2022).

items contained in this instrument measure specific skills using a self-reported Likert scale.[16] Item-level information functions (IIF) for each item are reported for each measure in Figure 3. These IIFs suggest that while the measures do a good job discriminating between individuals with low-levels of social skills, they may provide limited information on individuals whose social skills are above the median. Given the ordinal responses in the survey, we build from item-response theory (IRT) and use graded response models (GRM) to develop indices of these measures that maximize the information each provides. The indices we use are anchored in the baseline measures to have a standard deviation of one and mean of zero.[17] To test for the validity of our social skill measures, We report correlations between post-period labor market outcomes and social skills in Appendix Table A.2. Though the correlations are weak, they are in the expected direction, suggesting that these measures capture relevant skills for the labor market. Column 1 in reports the mean scores for the control group. Differences from the control mean are reported for the different treatment groups together (Column 2) and separately (Columns 3 and 4). There is little evidence that groups are out of balance at baseline, as suggested by the joint significance test.

3.2 Administrative Data

We conducted our follow up surveys between 3 and 7 months after the participants finished the program. To be able to examine the long-term impacts of the program, we use Social Security records up until December of 2019. This allows us to examine the labor market outcomes for individuals between 11 months and 17 months after finishing the program. Since the Social Security records only provide information about formal sector jobs that provide social security benefits, we are not able examine informal sector jobs as we do with our survey data. We impute zeros for all outcomes for which a person does not show up in the administrative data that month. Overall, there are 107 individuals who never show up in the administrative data. Of these, 50 individuals are from the control group, 28 are from the training program emphasising social skills, and 29 are from the training program emphasizing technical skills. In addition, due to confidentiality, for the process of merging our experimental sample with Social Security records—a process undertaken by the Ministry of Health and Social Protection—we have to delete all personal information and only identify who was in different treatment arms and who was in the control group. Therefore,

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[16]The specific Likert scale used varies across items, ranging from 4 to 7.

[17]We also supplement our analysis with simple index measures calculated as the mean of several self-reported questionnaire items. The analysis using IRT-based measures are in line with the mean-based index measures of social skills.

all the analysis with administrative data does not control for observable characteristics. Nevertheless, given the baseline balance in characteristics across treatment arms, it is highly likely that controls for baseline characteristics would not make a difference in the point estimators.

Figure 2 shows data on employment characteristics from monthly administrative records for the control and treatment groups. Panel (a) shows the trajectory of days of formal employment, Panel (b) shows formal employment probabilities, and Panel (c) shows monthly wages. The solid lines in the figures represent the control group, the dashed lines represent the social treatment and the discontinuous lines represent the technical treatment. Figure 2(a) shows that prior to treatment (most courses ended by November 2018 except for 2 which ended on December 3rd), all groups had on average about 5 days of formal employment per month. Days of employment jumped for all groups starting in December of 2018, but the jump was greater for the two treatment groups than for the control group and this persisted until December of 2019. Similarly, Figure 2(b) shows that the probability of formal employment was only around 0.2 for the treatment and control groups prior to conclusion of the courses, the probability of formal employment jumps disproportionately for the two treatment arms relative to the control group after December of 2018 and remains relatively higher until December 2019. Finally, Figure 2(c) shows also similar wages prior to the courses, and relatively higher wages for the treatment individuals compared to the control individuals after the conclusion of the courses.[18] These figures preview similar findings in the next section using our survey data, which allows us to control for other characteristics, as well as a more detailed event-study analysis of the administrative data.

4   Results

4.1   Aggregate Effects of Vocational Training

Figure 2a-c show the descriptive data underlying our estimates. Even from just these descriptive figures, the aggregate results of the paper are clear. Random assignment to vocational training increases monthly formal employment and contributions (a proxy for income).

These same patterns are apparent in our event-study analysis of the data where we estimate differences between treatment and control groups (β_t) month-by-month, and include

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[18]A possible reason for the jump in the outcomes of applicants in the control group is that the vocational training administrators reported that some applicants initially denied spots in training (due to oversubscribed programs) were taken off of the waitlist. See Table A.3.

month fixed-effects (π_t).[19] Standard errors are clustered at the individual level. Since we are unable to link the administrative and survey data, these estimates are run without any control variables, course-fixed effects, or a measure of days since the course ended.[20]

$$Y_{it} = \sum_{t=1}^{31} \beta_t T_{it} + \pi_t + \eta_{it} \tag{1}$$

Figure 4 shows the event study analysis of the training program on these three outcomes. While the first course finished on July 20th, 2018 and the last ended on December 3, 2018, most courses ended by November of 2018. Figure 4(a) shows that days worked were very similar between treatment and control individuals up to November 2018, but that they increased sharply for those assigned to treatment relative to control individuals starting in December 2018 and were much higher for this group during the year 2019. Figure 4(b) shows a similar increase in employment probabilities for treatment relative to the control group individuals starting in December. Also, monthly wages show a similar a jump in December 2018 that remains for the rest of the 2019.[21] Figures 5 and 6 show separate effects for the two treatment arms.

To provide a single estimate of the effects of the training programs we pool the monthly administrative records (Table 3, Panel A). We run these estimates using a differences-in-differences model where we compare the outcomes of individuals before taking part in the experiment to those after all coursework ended (Equation 2).[22] All estimates are clustered at the individual level. Our model allows differences in outcomes prior to treatment (β_1) as well as for changes in employment outcomes while treated individuals are exposed to the training (β_2).[23] The coefficient of interest (β_3) measures the average effect of the training program after December 2018.

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[19]The first-stage on enrollment is 60 percent, due primarily to people who were assigned to the program but chose not to enroll. To estimate the effects of treatment on treated individuals, we can scale the reduced-form results by nearly two (dividing by 0.60). However, since we are interested in the effects of offering training we focus on the reduced form estimates. See Tables A.3 and A.4 which present estimates of the first-stage on enrollment and compare characteristics of those who enroll and those who do not enroll within the treated group. Importantly, Table A.4. shows that observable characteristics do not individually or jointly predict enrollment. Note that the only characteristic which predicts enrollment at the 10% level is enrollment in formal schooling.

[20]Ideally, these estimates would include course-fixed effects. Since we cannot link them to the administrative data, however, we check to see how our survey-based results are affected by the inclusion of course-fixed effects. Fortunately, the results do not budge with and without course-fixed effects (See Table A.5).

[21]Note that we examine monthly wages instead of wages per hour because we do not have hours in the administrative data. When we examine monthly wage in the survey data we also find the same effect as in the administrative data, indicating that this increase in wages is due to increased days and hours worked.

[22]Since labor market outcomes of participants are highly auto-correlated over time, we use a DiD specification rather than ANCOVA (McKenzie, 2012).

[23]Including the "During" period to our analysis avoids any mechanical relation between post-period results and dips in employment due to participation in the training program.

$$Y_{it} = \beta_1 T_i + \beta_2 (T_i * During_t) + \beta_3 (T_i * Post_t) + \pi_t + \eta_{it} \qquad (2)$$

These results suggest that the vocational training program increased employment by 2.16 days per month, the likelihood of being employed each month by nearly 8 percentage points, and social security contributions (a proxy for wages) by US$20.66 per month.

Next, to study the effects in more detail, we turn to our survey data. Unfortunately, as is shown by the second shaded region in in Figure 2, the survey was collected in February 2019, a month that appears to diverge from other months in the post-period. In Panel B of Table 3, we show that the point estimates for all outcomes using administrative data is near zero in this month. The results from this table suggest that the increase in employment with a contract (in Table 4) may not correspond to formal employment, as measured by the Social Security Records. Still, the estimates using survey data provide insight to what is happening under the hood, and can be used to gauge the sensitivity of our estimates to the inclusion of course fixed effects and controls.

First, we simply estimate differences in average outcomes (Y_{ict}) of those individuals i assigned to course c at time t to treatment (T) and those assigned to the control group, including course fixed effects (γ_c). Then, we add additional covariates for baseline characteristics (X_i) and days from the final day of scheduled training.[24,25] Standard errors are clustered at the individual level. To perform these estimates, we use variations of a model of the following form:

$$Y_{ict} = \beta_0 + \beta_1 T_{it} + \beta_2 X_i + \gamma_c + \eta_{ict} \qquad (3)$$

The results from these estimates are reported in Columns 1 and 2 of Table 4. Assignment to training increases employment by 8 percentage points (15 percent) and the likelihood of having employment with a contract by 14 p.p. (50 percent) and decreased the likelihood of being a casual worker by 15 p.p. (34 percent). Additionally, we also find positive effects of training on days and hours of work in the survey data. Training assignment increased days worked per month by 2.5 days (19 percent) and hours worked per week by 4.6 hours (19 percent). These results suggest an increase in overall employment as well as a shift towards formal employment. By contrast, we find no evidence of increased productivity as measured by hourly wages. These results are stable to the inclusion of controls (compare columns 1 and

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[24]Course fixed-effects are included since we randomized applicants within stratification groups based on the courses they applied to. However, Table A.5 shows that our results are robust to the exclusion of course fixed effects.

[25]The vector of baseline characteristics includes pre-period outcome measures as well as key characteristics such as years of schooling, marriage status, and age - all interacted with gender. We also have a variable documenting when the interview was collected.

2) as well as to the inclusion of strata fixed effects (compare columns 1 and 2 in Appendix Table A.5).[26]

These labor market effects estimated with survey data for February 2019 are replicated using administrative data for the same month (Table 3, Panel B). As shown in Figure 2, compared to other months, the labor market participation that month was low for treated individuals. In fact, using only administrative data, it looks like assignment to vocational training had no effects in February 2019. Overall, formal employment increased only a statistically insignificant 4 p.p. in the administrative data in February 2019 compared to 14 p.p. in the survey data, while the days worked and monthly income are negative – both are positive in the survey data. These discrepancies between survey and administrative results for February 2019 suggest that the effects in the administrative data may be under-estimates of overall effects for other months as well.

The next four columns (Columns 3-6, Table 4) report estimates of vocational training separately for those with greater emphasis on social training and those with greater emphasis on technical training. The results for the social treatment arm show a shift from informal towards formal employment, while the results for the technical treatment arm show the same increases on overall employment, days and hours worked and a shift towards formal employment found when combining both treatments. These results suggest that treatment improved labor market outcomes and that the effect was greater for those with more emphasis on technical training.

Panel B of Table 4 reports estimates of vocational training on our survey measures of social skills. These results suggest that vocational training may improve organizational and communication skills, though the results are somewhat imprecise.[27] This imprecision may be due to challenges in discriminating between individuals with different levels of social skills (See Figure 3). That said, the results in other areas are generally positive, suggesting that vocational training may improve social skills.

Next, we take advantage of the dynamic nature of the monthly administrative data to test whether or not the benefits of vocational training fade-out over time (Table 5, Rows three across all specifications). To estimate the dynamic effects of training on employment,

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[26]When we adjust these estimates for multiple-hypothesis testing using FQR q-values (Appendix Table A.6), our results for increased participation in formal work remain statistically significant at the 99% level without controls. Our results on the probability of being employed with a contract and being a casual worker are significant at the 5% level when we add our full set of controls (Benjamini et al., 2006). In this multiple-hypothesis testing exercise we consider all outcomes to be members of the same family. This more conservative assumption could be relaxed by splitting up our outcome variables into two families: labor market outcomes and skills.

[27]These results are in line with mean-based measures of social skills. We also study effects at the item-level to see whether the zeros we estimate mask item-level heterogeneity (Table A11-A12).

we focus on the term interacting the treatment in the post-period with the number of months following treatment (Equation 4).

$$Y_{it} = \beta_0 + \beta_1 T_i + \beta_2 (T_i * During_t) + \beta_3 (T_i * Post_t) + \beta_4 (T_i * MonthsPost_t) + \pi_t + \eta_{it} \quad (4)$$

The third row in Panel A measures any potential dynamic effects of training on employment. These coefficients are small and statistically insignificant, suggesting that we are unable to detect any evidence of fadeout the post-training labor market outcomes between those assigned to treatment and control groups.

We estimate the dynamic effects of vocational training separately for applicants admitted to the program emphasizing social skills (Panel B) and the program emphasizing technical skills (Panel C). While applicants assigned to the program emphasizing social skills sustain the benefits of job training over time, applicants assigned to the technical treatment appear to lose ground with time (row 3 of Panel C).[28] These differences between applicants assigned to different branches of the training program are analyzed more closely in the following section.

4.2 Hard and Soft Skills in Vocational Training

We, then, examine differences in the dynamics between the labor market outcomes of people admitted to the social and technical tracks using administrative data. Figure 7 shows the ITT employment dynamics between social and technical treatment groups using the administrative data. Figures 7(a)-(c) show clear negative effects of social training (vs. technical training) in the initial post-treatment period on days, employment probabilities and monthly wages. As time passes, however, the differences in labor market outcomes between the social and technical treatment groups disappear. That is, the differences between the two groups go from being negative in December 2018 and the first few months of 2019 to being zero in the second half of 2019.

Panels B and C of Table 5 examine impacts separately for those that receive more emphasis of social and technical training, respectively. As with the survey data, these results show a larger impact for those who received more emphasis on technical training. For those with more social skills training, there is a 0.11 increase in the probability of monthly employment – 1.72 days a month – and insignificant increases of US$21 in wages. Those who receive

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[28]These results parallel those by Alfonsi et al. (2020) who find that vocational training, which is more general in nature, has more sustained gains than firm-provided training, which is more specific in nature.

technical skills training experience an increase of 3.88 days worked monthly, an increased probability of employment of 0.15 pp and an increase in monthly wages of US$39, all significant at the 1 percent level. We are unable to detect differences in social skills between individuals randomized into the programs with a social vs. technical emphasis (Table 6, Panel B).[29]

We formally test if the post-training dynamics are affected by assignment to the social vs. technical training programs in Table 5 (Panel D). We include a social treatment dummy, social treatment dummy interacted with a post-treatment dummy and a social treatment dummy interacted with both the post-treatment dummy and the months since November. The negative sign in the double interaction term suggests that there may be an initial cost to social skills training, but the positive sign in the triple interaction term suggests that social skills help improve workers performance in the labor market over time.[30] This is in line with the positive impact of soft skills found in Deming (2017).

While we find corresponding differences between social and technical training using survey data in Table 6, these results are much less precise. Also, since we are unable to follow participants for a period of time using the survey data, we cannot capture the dynamics we are able to see in the administrative data. The survey data also suggests that applicants exposed to the social training may experience improvements in communication skills (0.12 SD) compared to those who receive technical training.[31]

4.3 Does Receiving a Stipend Make Vocational Training More Effective?

In Table 7 we test for whether stipend receipt magnifies or reduces the effects of admission to vocational training. Before studying the effects of the stipend, we check for balance between admits with and without the stipend (Table A.1). These results suggest few differences in pre-treatment characteristics of individuals randomized to receive the stipend. Table 7 reports the results from a specification that includes an interaction of the treatment with the stipend to see if the training has a bigger or smaller effect when a stipend is provided to the students. At the extensive margin, the results show that providing training together with the stipend

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[29]Again, we also examine these results using mean-based indices (Table A.10), and look at whether our zeros mask item-level heterogeneity (Tables A.11-A.12).

[30]We test for whether these slopes are sensitive to the removal of the first post-period month, which looks to be an outlier. Results from these regression are not statistically significantly different from regressions including the first post-period month.

[31]Note that this is consistent with the findings by Adhvaryu et al. (2018) who find gains in communication skills from social skills training in India.

receipt had large positive and significant effects on employment. The effects on employment, days and hours worked are larger when training and the stipend are provided together.[32] Without stipend receipt, the effects of vocational training are zero, suggesting that resource constraints exhibit a serious obstacle for people, preventing them from vocational training programs. This is in line with the findings in Kugler et al. (2022) who also find evidence of credit constraints in another training program in Colombia. Another interpretation of this finding is that the conditionality of attending the program the week the stipend was doled out may drive these results.

4.4 Differential Impacts by Gender

Tables 8 and 9 report results of models that interact a female dummy with the treatment dummy to identify if there are differential effects of the program by gender. In order to run these pooled models, we completely saturate the regression with interactions of all demographics with the gender indicator. Though differences in effects for men and women are statistically insignificant for most outcomes, the third row of Table 8 shows heightened effects for men compared to women in terms of monthly earnings. Thus, Table 9 also suggests that men were more likely to benefit from vocational training in terms of acquiring inter-personal skills than their female counterparts.[33] Note that these results contrast with previous evaluations of training programs for young people, which find bigger effects of training on young women (Attanasio et al., 2011; Card et al., 2011; Acevedo et al., 2020).[34]

4.5 Cost-Benefit Analysis

Although the program may have non-wage benefits, wage returns represent a lower-bound of a program's benefits. The reduced form estimates from the administrative data suggest that, in aggregate, program participants experience a monthly US$21 wage gain by participating in the program for the first year following program participation. We focus on

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[32]The results also show higher montly earnings of training with the stipend, probably largely driven by days and hours worked since the effect on hourly earnings is zero.

[33]We also test for heterogeneity by education and social strata, but we are unable to detect any differences by prior education or social strata probably partly due to the degree of homogeneity in our sample across these measures.

[34]One potential reason for differences between our study's and other studies in Latin America might be due to differences in the target population (older) and industry mix (service sector) in Cali, Colombia, the focus of our study. In addition, the training program we evaluate provides more in-depth social skills training which appears to be more useful for men.

estimates from our administrative rather than survey data because they are measured more accurately, offer insight into effects across a greater span of time, and because the endline survey was, unfortunately, collected during February, a month not representative of typical labor market conditions (see Table 3). Still, comparing the administrative data estimates in February 2019 to those from survey data, suggests that the effects using administrative data may, if anything, underestimate the effects of vocational training. Moreover, the wage returns recorded in administrative data do not include the non-pecuniary benefits of formal employment, which can provide non-pecuniary benefits such as health insurance and social security. Given the average age of program participants of 26, we assume that they will work another 35 years. Since we can only follow participants for one year after the program, the overall cost-benefit analysis will hinge on assumptions regarding whether or not the benefits individuals experience are permanent, or whether they fade-out over time. In Panel D of Table 10, we present two scenarios: one in which the benefits of the program persist, and another where we assume 10 percent annual depreciation. Under the first scenario, participants experience a benefit of US$4,262 over their lifetimes, whereas under the second scenario participants experience a US$1,186 benefit over their lifetimes.[35]

Including the stipend, the direct marginal costs of operating the program are US$176. As such, the two scenarios represent lifetime wage gains of US$4,086 and a US$1,010 respectively. The cost-effectiveness of the vocational programs emphasizing social versus technical skills are similar. Put another way, our results suggest that the vocational training program pays for itself in about eight months. To estimate the treatment on treated, we would divide these estimates by 0.60, suggesting that the program would pay for itself even sooner – in just over four months. Of course, the COVID-19 pandemic may affect the returns to vocational training programs in unexpected ways. In a new working paper (Barrera-Osorio, Kugler, and Silliman, 2021), we find that the pandemic-induced recession fully erased the gains from the program. Yet, given that the program pays for itself in between 4 and 8 months, the costs of this program would have been covered prior to the time COVID-19 hit Colombia.

5 Discussion and Conclusion

We use a randomized experiment in Cali, Colombia to study the effects of vocational training on labor market outcomes. In aggregate, we find that vocational training shifts people to the formal sector of the labor market and increases their monthly earnings and overall

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[35]We find no evidence of a fadeout in monthly returns a year after the program ended (Table 5).

employment. Importantly, our results show positive impacts both in the short and medium term, with effects persisting up to 12 and 17 months after the program.

The key novelty of this study is that we examine how providing different intensities of soft or technical skills as part of vocational training affects labor market dynamics. We randomize vocational admits to receive varying degrees of social skills training. Our results show that both programs with an emphasis in social and technical skills have a positive impact on labor market outcomes, the program with emphasis on technical skills has a bigger short term effect. However, we find that those with an emphasis on soft skills catch up to those who receive more technical training about 6 to 12 months later in terms of employment, earnings and hours worked. The catch up of those receiving more soft skills could be due to the ability of those with soft skills to learn on the job due to the acquisition of organizational and communication skills. Alternatively, organizational and communication skills gained through training may help these individuals retain their jobs and negotiate better salaries.

Our paper, thus, provides the first experimental evidence showing that while technical skills may improve immediate labor market outcomes, social skills help to sustain employment benefits over time. Our paper contributes to the literature on soft skills in the workplace. First, we provide some evidence that soft skills can be taught even to older people. Second, there are only a handful of randomized trials on soft skills training. Ours is the first one to show that soft skills training can have long-lasting effects for both men and women. Groh et al. (2016) find no effect, but their training takes place in a 9-day period and only lasts a total of 45 hours. Acevedo et al. (2020) find effects only short term impacts on young women but not on young men in the Dominican Republic. However, not only was soft training offered after hours and it is possible that young men did not attend, but it is not possible to disentangle whether the effect of this program was due to an internship offered in conjunction with the soft skills training. Like our study, Adhvaryu et al. (2018) show that soft skills training to female government workers in India increases their communication skills but only had small effects on labor market outcomes. Unlike our study which finds larger effects, they do not include men, nor do they contrast between soft and technical skills training. Thus, our paper is the most convincing evidence to date on the effectiveness of a well-designed soft skills intervention.

Further, we randomize stipend receipt to study how resource constraints affect participation in vocational training programs in developing country contexts. Our results suggest that resource constraints may be an important reason why individuals are unable to follow through with their investments in vocational training.

Taken together, our results suggest that the extent to which vocational programs include

general skills such as social skills, can help sustain their benefits into the longer term.

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Figures and Tables

Figure 1: Study design
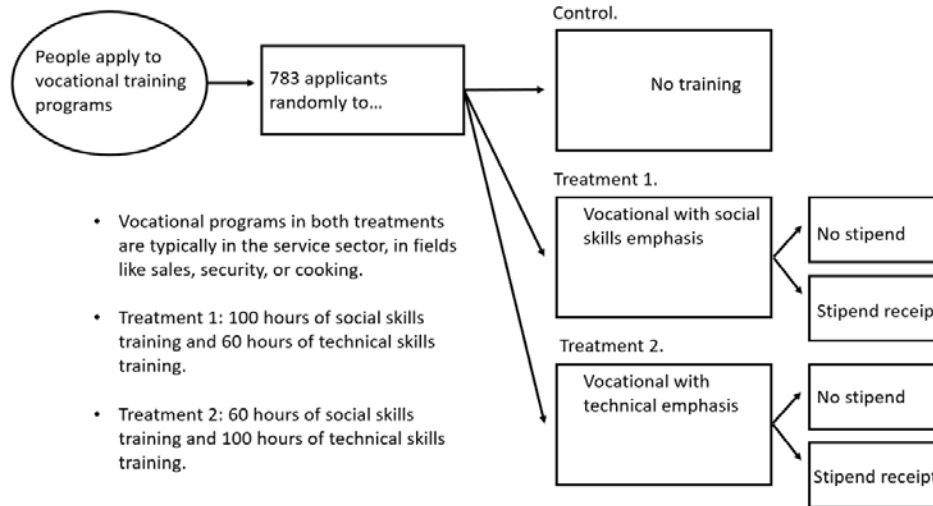
*Note*s: Figure 1 illustrates the design of the study. For simplicity, courses are left out of the diagram. Random assignment following the rightmost column occurs for each course separately. In total, 18 courses – each lasting 160 hours – were offered in 8 different areas of the service sector: sales and client services, general services, surveillance and security services, cashiers, quality control assistant, cooking assistant, delivery assistant and storage assistant. The program offered two of each of these types of courses, except for 4 courses in General Services. For each area, half the courses are offered with an emphasis on social skills, the other half with an emphasis on technical skills. Finally, half the participants assigned to either treatment received a stipend for attendance.

Figure 2: Descriptive graphs from administrative registers
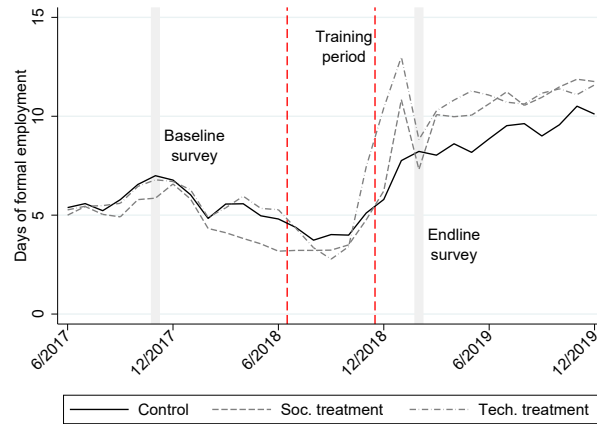
(a) Days of employment
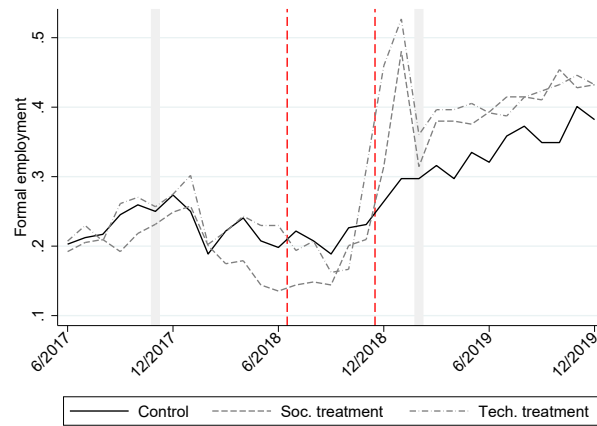
(b) Employment
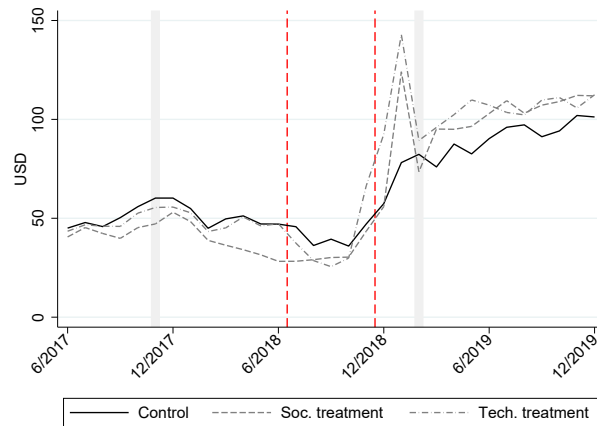
(c) Contributions

*Note*s: Figure 2 displays mean outcomes by treatment group. As shown in Figure 2(a), the gray vertical regions mark the baseline and endline data collection, and the red vertical lines indicate the beginning and end of the treatment periods.

Figure 3: Item information functions for social skill measures
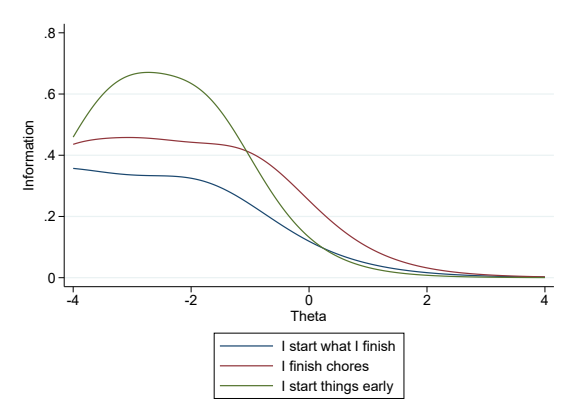
(a) Work ethic
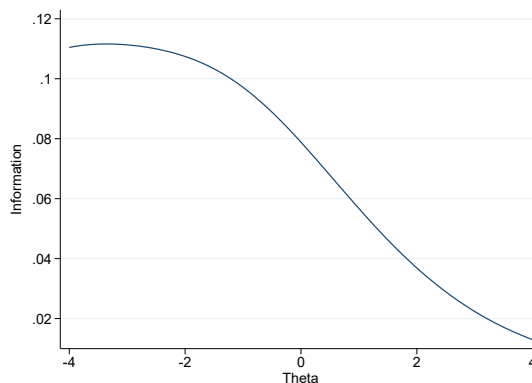
(b) Organisational
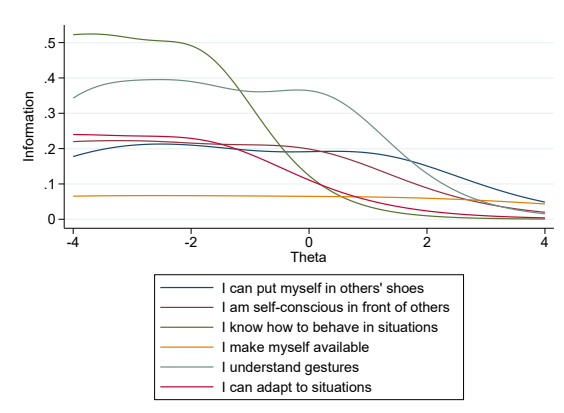
(c) Interpersonal
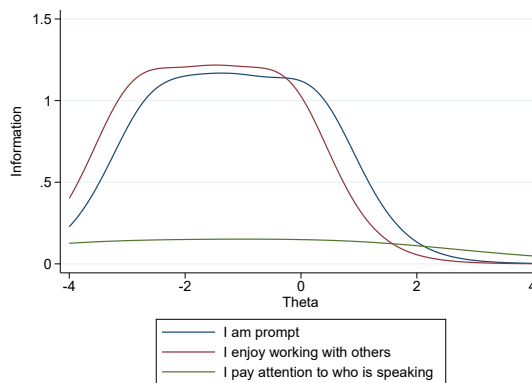
(d) Teamwork
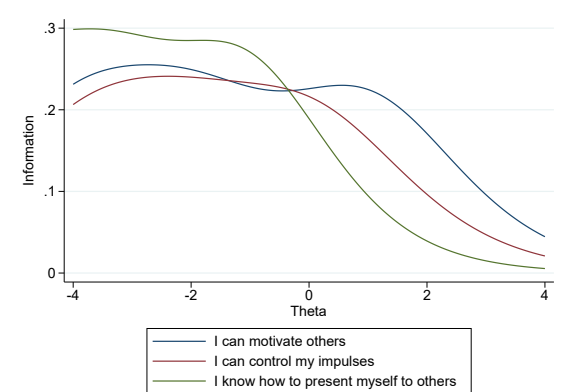
(e) Leadership
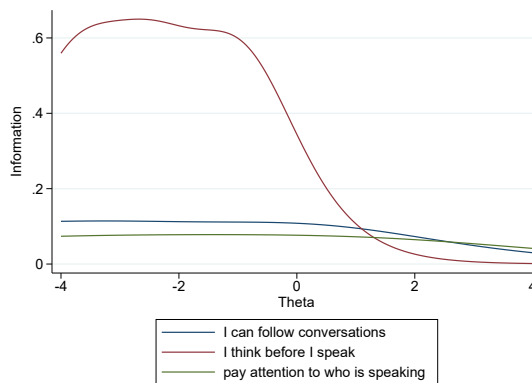
(f) Communication

Figures a-f show item-level information curves for each question underlying the social skill measure used in the paper.

Figure 4: ITT graphs from administrative registers: Treatment-control

(a) Days of employment

(b) Employment

(c) Contributions
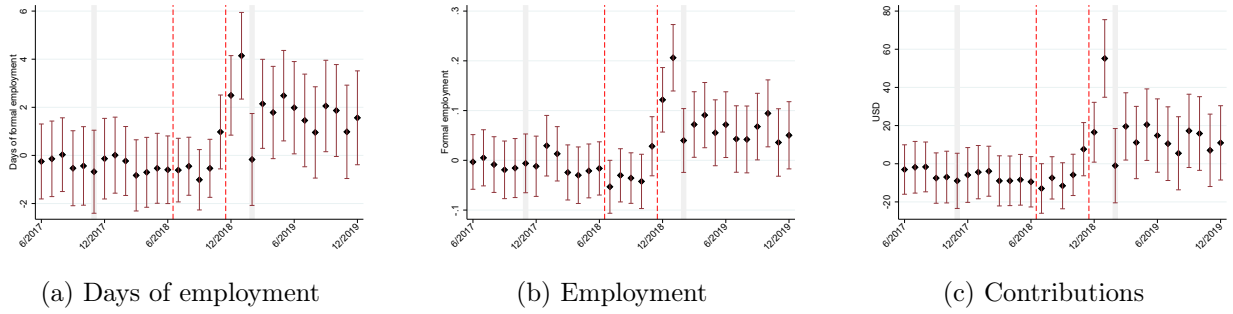
Figures a-c report monthly differences between applicants admitted to the vocational training program compared to those not admitted. Ninety five percent confidence intervals are included for each point estimate.

Figure 5: ITT graphs from administrative registers: Social treatment-control
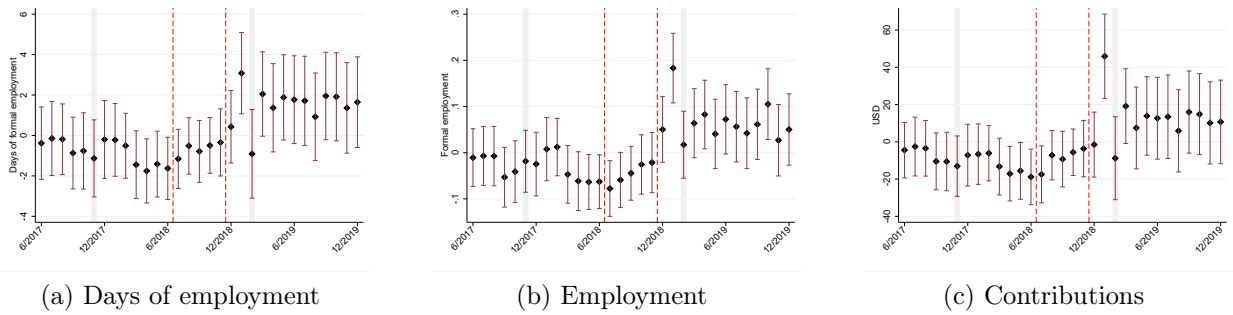
(a) Days of employment

(b) Employment

(c) Contributions

Figures a-c report monthly differences between applicants admitted to the social training program compared to those not admitted. Ninety five percent confidence intervals are included for each point estimate.

Figure 6: ITT graphs from administrative registers: Technical treatment-control

(a) Days of employment   (b) Employment   (c) Contributions
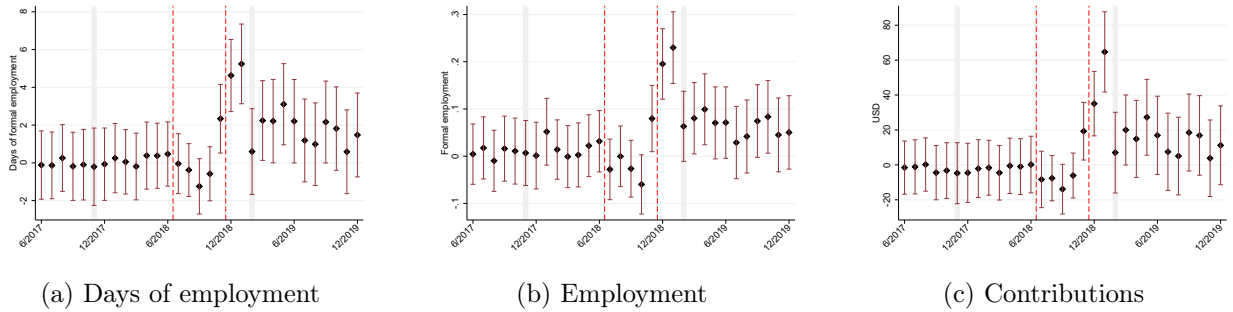
Figures a-c report monthly differences between applicants admitted to the technical training program compared to those not admitted. Ninety five percent confidence intervals are included for each point estimate.

Figure 7: ITT graphs from administrative registers: Social treatment - technical treatment
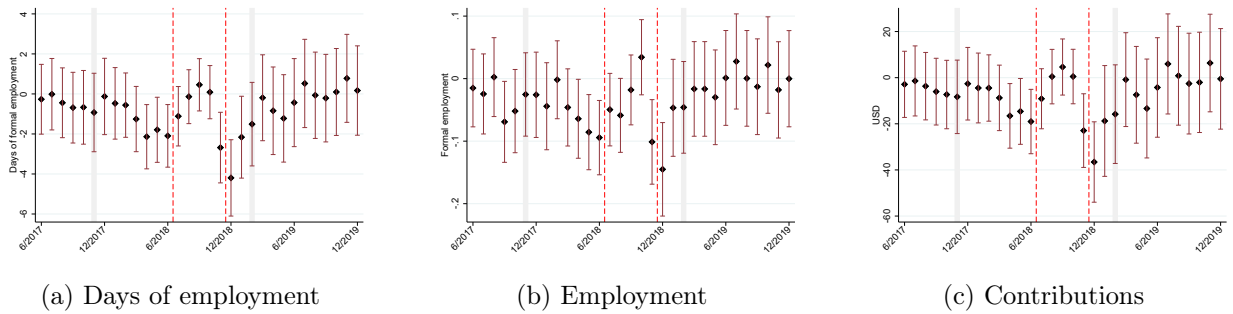
(a) Days of employment   (b) Employment   (c) Contributions

Figures a-c report monthly differences between applicants admitted to the social training program compared to those admitted to the technical training program. Ninety five percent confidence intervals are included for each point estimate.

Table 1: Covariate balance check

	Control mean	Treatment-control difference	Treatment arm 1: Social-control difference	Treatment arm 2: Technical-control difference
Male	0.34	0.01	-0.00	0.01
	(0.03)	(0.03)	(0.03)	(0.03)
Age	26.21	-0.23	-0.40	-0.03
	(0.44)	(0.51)	(0.57)	(0.60)
Years of education	11.31	-0.01	-0.13	0.11
	(0.11)	(0.13)	(0.16)	(0.14)
Black	0.55	0.01	0.00	0.02
	(0.03)	(0.04)	(0.05)	(0.05)
Mestizo	0.17	-0.01	0.01	-0.03
	(0.03)	(0.03)	(0.04)	(0.03)
Indigenous	0.03	-0.00	-0.01	-0.00
	(0.01)	(0.01)	(0.02)	(0.02)
Disability	0.02	-0.01	0.00	-0.02
	(0.01)	(0.01)	(0.02)	(0.01)
Primary education	0.99	-0.01	-0.01	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Secondary education	0.94	-0.02	-0.03	-0.02
	(0.02)	(0.02)	(0.03)	(0.02)
Technical higher education	0.29	0.02	-0.01	0.05
	(0.03)	(0.04)	(0.04)	(0.04)
Professional higher education	0.02	0.00	0.00	0.01
	(0.01)	(0.01)	(0.02)	(0.02)
Enrolled in school	0.07	-0.01	-0.02	-0.00
	(0.02)	(0.02)	(0.02)	(0.02)
Using Public Employment Service	0.37	-0.03	-0.06	-0.01
	(0.03)	(0.04)	(0.04)	(0.05)
Household size	4.45	0.11	0.37 **	-0.15
	(0.13)	(0.15)	(0.17)	(0.17)
HH income per day (USD)	19.23	2.57	7.93	-2.25
	(4.25)	(5.64)	(7.64)	(4.94)
HH with electricity	1.00	-0.01	-0.01	-0.01
	(0.00)	(0.01)	(0.01)	(0.01)
HH with water	0.99	0.00	-0.00	0.00
	(0.01)	(0.01)	(0.01)	(0.01)
HH with sanitation	0.98	-0.00	-0.01	0.00
	(0.01)	(0.01)	(0.02)	(0.01)
Joint significance		F-test = 0.50	F-test = 0.94	F-test = 0.60
		p-val = 0.96	p-val = 0.53	p-val = 0.89
Course/Stratification FE	No	Yes	Yes	Yes
Observations	212	663	434	441

Notes: The table reports control means and differences in means between treatment and control groups, along with standard errors. All comparisons between treatment and control groups are within stratification group. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 2: Baseline labor-market outcomes and social skills

	Control mean	Treatment -control difference	Treatment 1: Soc.-control difference	Treatment 2: Tech.-control difference
		Panel A: Labor-market measures		
Employed	0.55	0.01	0.01	0.01
	(0.03)	(0.04)	(0.05)	(0.05)
With contract	0.28	0.01	0.03	-0.01
	(0.03)	(0.04)	(0.04)	(0.04)
Casual worker	0.44	-0.01	-0.01	-0.00
	(0.03)	(0.04)	(0.05)	(0.05)
Days worked per month	13.48	-0.12	0.99	-1.34
	(0.93)	(1.08)	(1.25)	(1.24)
Hours worked per week	24.43	-0.29	-0.06	-0.79
	(1.78)	(2.10)	(2.41)	(2.43)
Wage per hour (USD)	1.19	0.15	0.65	-0.37
	(0.48)	(0.59)	(0.81)	(0.49)
Monthly earnings	24.27	3.86	8.07	-0.44
	(2.58)	(4.93)	(6.30)	(3.83)
		Panel B: Social skills		
Work ethic	-0.00	0.01	-0.04	0.05
	(0.04)	(0.05)	(0.06)	(0.06)
Organizational	0.01	-0.02	-0.02	-0.02
	(0.02)	(0.02)	(0.03)	(0.02)
Interpersonal	-0.03	0.04	0.03	0.04
	(0.05)	(0.06)	(0.07)	(0.07)
Leadership	-0.00	0.00	-0.03	0.03
	(0.04)	(0.05)	(0.06)	(0.06)
Teamwork	-0.05	0.07	0.06	0.08
	(0.06)	(0.07)	(0.08)	(0.08)
Communication	0.02	-0.03	-0.11 *	0.05
	(0.04)	(0.05)	(0.06)	(0.05)
Joint significance		F-test = 0.28	F-test = 1.07	F-test = 0.72
		p-val = 0.99	p-val = 0.38	p-val = 0.74
Course/Stratification FE	No	Yes	Yes	Yes
Observations	212	663	434	441

Notes: The table reports control means and differences in means between treatment and control groups, along with standard errors. All comparisons between treatment and control groups are within stratification group. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 3: Administrative data estimates for post-period

	Days of formal employment	Months of formal employment	Monthly SS contributions
Panel A: Treatment-control			
Treatment	2.16 **	0.08 **	20.66 **
	(1.09)	(0.04)	(10.17)
Observations	663	663	663
Panel B: Only using February 2019			
Treatment	-0.17	0.04	-1.02
	(1.16)	(0.04)	(11.83)
Observations	663	663	663

Notes: This table shows the estimates of treatment on administrative outcome measures for the post period (Panel A). Additionally, for comparison with the survey data, we show estimates of treatment on outcomes only for the month of February 2019, the month that the endline survey data was collected (the second shaded in area in all figures). This is shown separately, since there is a big dip in employment for February in all the figures, potentially making the estimates for February 2019 unrepresentative of employment outcomes in other months.

Table 4: ITT estimates (Survey data)

	Treatment vs. control		Treatment 1: Soc. vs. control		Treatment 2: Tech. vs. control	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Labor market outcomes						
Employed	0.08**	0.07	0.07	0.05	0.10**	0.09
	(0.04)	(0.05)	(0.05)	(0.06)	(0.05)	(0.06)
With contract	0.14***	0.12**	0.10***	0.06	0.17***	0.17***
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)	(0.05)
Casual worker	-0.15***	-0.15**	-0.15***	-0.15**	-0.16***	-0.15**
	(0.04)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)
Days worked per month	2.52**	2.24	2.09*	0.66	3.03**	4.24***
	(1.04)	(1.41)	(1.17)	(1.52)	(1.20)	(1.63)
Hours worked per week	4.58**	4.50	3.41	3.06	5.87**	6.63**
	(2.07)	(2.80)	(2.32)	(3.02)	(2.41)	(3.25)
Wage per hour (USD)	-0.00	-0.35	-0.00	-0.98	-0.00	0.28
	(0.05)	(0.61)	(0.06)	(0.83)	(0.06)	(0.52)
Monthly earnings	4.96	3.75	2.91	-2.42	7.53	10.85
	(8.06)	(9.77)	(9.39)	(11.78)	(9.45)	(10.38)
Panel B: Social skills						
Work ethic	0.01	0.01	-0.03	-0.00	0.05	0.02
	(0.04)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)
Organizational	0.04*	0.06**	0.03	0.06*	0.04*	0.06*
	(0.02)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)
Interpersonal	0.07	0.04	0.03	0.02	0.12*	0.07
	(0.06)	(0.07)	(0.07)	(0.08)	(0.06)	(0.08)
Leadership	0.06	0.04	0.06	0.07	0.06	0.02
	(0.05)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)
Teamwork	0.03	-0.04	0.06	-0.00	0.00	-0.06
	(0.06)	(0.08)	(0.07)	(0.09)	(0.07)	(0.09)
Communication	0.08*	0.08	0.07	0.16**	0.10*	0.01
	(0.05)	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)
Controls						
Baseline demographics	No	Yes	No	Yes	No	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	No	Yes	No	Yes	No	Yes
Days from graduation	No	Yes	No	Yes	No	Yes
Observations	663	653	434	429	441	432

Notes: Columns 1, 3, and 5 report differences between outcomes of treated and untreated groups from regressions that only contain a group identifier and stratification fixed effects. Columns 2, 4, and 6 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 5: Vocational training and employment dynamics (Administrative data)

	Days of formal employment	Months of formal employment	Monthly SS contributions
Panel A: Treatment-control			
Treatment	-0.33	-0.01	-5.00
	(0.83)	(0.03)	(7.28)
Treatment X Post	2.79 **	0.13 ***	29.70 **
	(1.25)	(0.04)	(11.78)
Treatment X Post X Months-post	-0.09	-0.01 *	-1.29
	(0.12)	(0.00)	(1.21)
Observations	663	663	663
Panel B: Social treatment-control			
Social treatment	-0.58	-0.02	-7.43
	(0.96)	(0.03)	(8.24)
Soc. treat. X Post	1.72	0.11 **	20.67
	(1.39)	(0.05)	(12.92)
Soc. treat. X Post X Months-post	0.05	-0.00	-0.13
	(0.14)	(0.00)	(1.38)
Observations	441	441	441
Panel C: Technical treatment-control			
Technical treatment	-0.08	0.01	-2.49
	(0.95)	(0.03)	(8.27)
Tech. treat. X Post	3.88 ***	0.15 ***	39.02 ***
	(1.44)	(0.05)	(13.59)
Tech. treat. X Post X Months-post	-0.23 *	-0.01 **	-2.48 *
	(0.13)	(0.00)	(1.30)
Observations	434	434	434
Panel D: Social-technical			
Social treatment	-0.82	-0.04	-7.04
	(0.68)	(0.03)	(5.77)
Soc. treat. X Post	-1.83	-0.03	-16.26
	(1.13)	(0.04)	(10.82)
Soc. treat. X Post X Months-post	0.28 **	0.01 *	2.35 **
	(0.12)	(0.00)	(1.18)
Observations	451	451	451
Month FE	Yes	Yes	Yes

Notes: Using data from administrative registries, Panels A-D study labor market dynamics after the end of vocational training. All regressions contain month fixed effects as well as treatment group identifier, an interaction between this and the a binary measure for the post-period, and an interaction between treatment group and the number of months after the end of vocational training. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 6: Social vs. technical treatment: Labor market outcomes and social skills

	Tech. treatment baseline mean	Soc.-tech. baseline dif.	Specification (1)	Specification (2)
Panel A: Labor market outcomes				
Employed	0.50	-0.03	-0.03	-0.02
	(0.03)	(0.05)	(0.06)	(0.06)
With contract	0.34	-0.06	-0.11 *	-0.11 *
	(0.03)	(0.04)	(0.06)	(0.06)
Casual worker	0.31	0.00	0.01	0.01
	(0.03)	(0.04)	(0.06)	(0.06)
Days worked per month	12.71	-0.96	-3.24 *	-3.09 *
	(0.86)	(1.18)	(1.65)	(1.65)
Hours worked per week	24.83	-2.59	-3.19	-3.25
	(1.74)	(2.36)	(3.34)	(3.29)
Wage per hour (USD)	0.45	-0.00	-0.97	-1.24 *
	(0.04)	(0.05)	(0.67)	(0.67)
Monthly earnings	83.67	-5.20	-11.87	-14.47
	(6.44)	(8.76)	(11.05)	(11.06)
Panel B: Social skill measures				
Work ethic	0.07	-0.08	0.01	0.00
	(0.03)	(0.05)	(0.07)	(0.07)
Organizational	0.04	-0.01	-0.00	-0.00
	(0.02)	(0.02)	(0.03)	(0.03)
Interpersonal	0.17	-0.08	-0.07	-0.07
	(0.05)	(0.07)	(0.08)	(0.08)
Leadership	0.10	0.00	0.07	0.05
	(0.04)	(0.05)	(0.07)	(0.07)
Teamwork	-0.19	0.06	0.09	0.05
	(0.05)	(0.07)	(0.09)	(0.09)
Communication	0.03	-0.03	0.13 *	0.12 *
	(0.04)	(0.05)	(0.07)	(0.07)
Controls				
Baseline demographics	No	No	No	Yes
Course/Stratification FE	No	Yes	Yes	Yes
Pre-treatment outcome	No	No	Yes	Yes
Days from graduation	No	No	No	Yes
Observations	229	451	451	445

Notes: After reporting baseline means for the technical treatment group and the baseline difference between the social and technical group, column 1 reports post-period differences from a regression including only group identifiers course-stratification fixed-effects, and column 2 reports results from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 7: Heterogeneity by stipend receipt: Labor market outcomes

	Employed	Formal contract	Casual worker	Days worked	Hours	Wages	Monthly Earnings
Treatment	-0.04	0.08	-0.14**	0.20	-0.99	-0.82	-12.67
	(0.07)	(0.06)	(0.07)	(1.77)	(3.50)	(0.77)	(12.36)
StipendXTreatment	0.23***	0.09	-0.01	4.19*	11.27***	0.91	32.39**
	(0.08)	(0.08)	(0.09)	(2.19)	(4.35)	(0.93)	(15.01)
Controls							
Baseline demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days from graduation	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	653	653	653	632	631	607	607

Notes: Half of all individuals were randomly assigned to receive a stipend. Row two reports regression coefficients measuring the differences in labor-market results between those receiving a stipend an those not receiving the stipend. All regressions include baseline demographics, stratification fixed effects, pre-treatment outcomes, and the measures of the time elapsed since graduation. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 8: Heterogeneity by gender: Labor market outcomes

	Employed	Formal contract	Casual worker	Days worked	Hours	Wages	Monthly Earnings
			Panel A: Main effects by gender				
Treatment	0.19**	0.20**	-0.21**	4.43*	8.39*	-0.31	29.67*
	(0.09)	(0.08)	(0.10)	(2.39)	(4.76)	(1.01)	(16.30)
Female	1.26***	0.31	-0.51	24.06**	49.05**	-7.52	117.12
	(0.45)	(0.40)	(0.48)	(11.55)	(22.97)	(4.89)	(78.51)
FemaleXTreatment	-0.19	-0.13	0.09	-3.36	-5.97	-0.07	-40.44**
	(0.12)	(0.10)	(0.12)	(2.97)	(5.91)	(1.27)	(20.38)
Observations	653	653	653	632	631	607	607
			Panel B: Social treatment by gender				
Treatment	0.20*	0.10	-0.21*	3.19	6.55	-1.73	13.62
	(0.10)	(0.09)	(0.12)	(2.65)	(5.26)	(1.43)	(20.26)
Female	1.14**	0.18	-0.63	20.22	41.79	-12.35*	105.23
	(0.53)	(0.47)	(0.60)	(13.39)	(26.64)	(7.23)	(102.35)
FemaleXTreatment	-0.23*	-0.06	0.08	-3.84	-5.31	1.15	-24.67
	(0.13)	(0.12)	(0.15)	(3.29)	(6.54)	(1.79)	(25.34)
Observations	429	429	429	420	419	402	402
			Panel C: Technical treatment by gender				
Treatment	0.18*	0.28***	-0.22**	5.61**	9.50*	1.18	43.11**
	(0.11)	(0.09)	(0.11)	(2.71)	(5.38)	(0.85)	(16.86)
Female	1.56***	0.07	-0.28	29.47**	54.38*	4.48	245.56***
	(0.56)	(0.49)	(0.61)	(14.61)	(29.03)	(4.58)	(90.77)
FemaleXTreatment	-0.14	-0.16	0.11	-2.16	-4.52	-1.43	-51.59**
	(0.13)	(0.11)	(0.14)	(3.40)	(6.76)	(1.08)	(21.32)
Observations	432	432	432	414	414	397	397
Controls							
Baseline demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Days from graduation	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Differences by gender are reported for social and technical treatments together (Panel A) and separately (B and C). Regressions include measures of treatment group, gender, an interaction between the two - as well as controls for baseline variables (interacted with gender), stratification fixed effects, and measures of the time elapsed since graduation. Significance levels (* = 0.10, ** = 0.05, *** = 0.01).

Table 9: Heterogeneity by gender: Social skill outcomes

	Work ethic	Organizational	Interpersonal	Leadership	Teamwork	Communication
	Panel A: Main effects by gender					
Treatment	-0.03	0.08*	0.31**	0.05	0.13	0.10
	(0.11)	(0.05)	(0.13)	(0.11)	(0.14)	(0.11)
Female	0.07	-0.38	0.80	-0.35	-0.26	-0.33
	(0.51)	(0.24)	(0.60)	(0.51)	(0.65)	(0.52)
FemaleXTreatment	0.06	-0.04	-0.40***	-0.01	-0.25	-0.02
	(0.13)	(0.06)	(0.16)	(0.13)	(0.17)	(0.13)
Observations	653	653	653	653	653	653
	Panel B: Social treatment by gender					
Treatment	-0.07	0.07	0.26*	0.08	0.26	0.18
	(0.13)	(0.06)	(0.15)	(0.13)	(0.16)	(0.13)
Female	0.15	-0.35	0.31	-0.35	0.02	-0.06
	(0.65)	(0.30)	(0.75)	(0.66)	(0.83)	(0.65)
FemaleXTreatment	0.10	-0.02	-0.36**	-0.02	-0.39*	-0.03
	(0.16)	(0.07)	(0.18)	(0.16)	(0.20)	(0.16)
Observations	429	429	429	429	429	429
	Panel C: Technical treatment by gender					
Treatment	0.02	0.09*	0.36**	0.03	-0.00	0.06
	(0.11)	(0.05)	(0.14)	(0.12)	(0.15)	(0.12)
Female	-0.47	-0.65**	0.69	-0.66	-0.23	-0.52
	(0.61)	(0.29)	(0.74)	(0.62)	(0.80)	(0.65)
FemaleXTreatment	0.01	-0.05	-0.44**	-0.02	-0.08	-0.07
	(0.14)	(0.07)	(0.17)	(0.14)	(0.19)	(0.15)
Observations	432	432	432	432	432	432
Controls						
Baseline demographics	Yes	Yes	Yes	Yes	Yes	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	Yes	Yes	Yes	Yes	Yes	Yes
Days from graduation	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Differences by gender are reported for social and technical treatments together (Panel A) and separately (B and C). Regressions include measures of treatment group, gender, an interaction between the two - as well as controls for baseline variables (interacted with gender), stratification fixed effects, and measures of the time elapsed since graduation. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table 10: Cost-effectiveness

	Aggregate			Social treatment			Technical treatment		
	Total	Per 100 USD	Percent per 100 USD	Total	Per 100 USD	Percent per 100 USD	Total	Per 100 USD	Percent per 100 USD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Costs									
Program cost	164.44			161.22			168.00		
Marginal cost	157.65			154.43			160.86		
Stipend (x0.5)	15.00			15.00			15.00		
Marginal cost w/ stipend	172.65	100		169.43	100		175.86	100	
Panel A: ITTs Estimates from Survey Data									
Employed	0.08	-	-	0.05	-	-	0.09	-	-
With contract	0.12**	0.07	41	0.09	-	-	0.16**	0.09	53
Casual worker	-0.13**	-0.08	-16	-0.14*	-0.08	-18	-0.13	-	-
Days worked per month	2.23	-	-	0.97	-	-	4.74**	2.70	28
Hours worked per week	4.61	-	-	3.78	-	-	6.32*	3.59	19
Wage per hour (USD)	-0.39	-	-	-0.89	-	-	-0.28	-	-
Wage per month (USD)	21.94	-	-	18.00	-	-	30.08*	17.11	19
Panel C: ITTs Estimates from Adminstrative Data									
Employed	0.08***	0.05	14	0.09**	0.05	16	0.08***	0.04	13
Days of contributions	2.16***	1.25	14	2.05*	1.21	13	2.27***	1.29	14
Contributions	20.66***	11.97	13	19.73**	11.64	13	21.63***	12.30	14
Panel D: Present Discount Value for 35 Years									
Discount rate of 5%	4,262	2,468		4,070	2,402		4,462	2,537	
Discount rate of 5% with 10% depreciation	1,186	687		1,132	669		1,242	706	

Notes: Column 1-3 reports the PDV estimates between the control group and both treatment groups pooled together. Columns 4-6 and 7-9 report the PDV estimates for the social and technical groups, respectively, as compared to the control group. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Appendix

Table A.1: Additional covariate balance checks

	Control mean	Treatment-control without course fixed effects	Treat 1 vs. 2: Social-technical difference	Within treat: Stipend-None difference
Male	0.34	0.03	-0.02	0.00
	(0.03)	(0.04)	(0.03)	(0.05)
Age	26.21	-0.25	-0.37	-0.08
	(0.44)	(0.51)	(0.57)	(0.99)
Years of education	11.31	-0.01	-0.24	-0.24
	(0.11)	(0.14)	(0.15)	(0.27)
Black	0.55	0.01	-0.01	-0.04
	(0.03)	(0.04)	(0.05)	(0.08)
Mestizo	0.17	-0.01	0.04	-0.06
	(0.03)	(0.03)	(0.03)	(0.06)
Indigenous	0.03	-0.00	-0.00	-0.04
	(0.01)	(0.01)	(0.01)	(0.03)
Disability	0.02	-0.01	0.02	0.00
	(0.01)	(0.01)	(0.01)	(0.02)
Primary education	0.99	-0.01	-0.01	-0.04 *
	(0.01)	(0.01)	(0.01)	(0.02)
Secondary education	0.94	-0.02	-0.01	-0.10 **
	(0.02)	(0.02)	(0.03)	(0.04)
Technical higher education	0.29	0.02	-0.07	0.14 **
	(0.03)	(0.04)	(0.04)	(0.07)
Professional higher education	0.02	0.01	-0.00	0.03
	(0.01)	(0.01)	(0.02)	(0.03)
Enrolled in school	0.07	-0.01	-0.02	0.04
	(0.02)	(0.02)	(0.02)	(0.04)
Using Public Employment Service	0.37	-0.04	-0.05	0.06
	(0.03)	(0.04)	(0.04)	(0.07)
Household size	4.45	0.10	0.52 ***	-0.17
	(0.13)	(0.15)	(0.16)	(0.28)
HH income per day (USD)	19.23	2.84	9.36	29.08 **
	(4.25)	(5.65)	(6.70)	(11.88)
HH with electricity	1.00	-0.01	0.00	-0.01
	(0.00)	(0.01)	(0.01)	(0.02)
HH with water	0.99	0.00	-0.01	0.01
	(0.01)	(0.01)	(0.01)	(0.02)
HH with sanitation	0.98	-0.00	-0.01	-0.01
	(0.01)	(0.01)	(0.02)	(0.03)
Joint significance		F-test = 0.59	F-test = 1.34	F-test = 1.21
		p-val = 0.91	p-val = 0.16	p-val = 0.25
Course/Stratification FE	No	No	Yes	Yes
Observations	212	663	451	451

Notes: The table reports control means and differences i means between treatment and control groups, along with standard errors. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.2: Correlations between skills and labor market outcomes

	Employed	With contract	Causal worker	Days worked	Weekly hours	Hourly wage
Work ethic	0.08	0.07	-0.06	0.07	0.06	0.05
Organizational	0.05	0.07	-0.06	0.05	0.02	0.04
Interpersonal	0.07	0.07	-0.02	0.05	0.05	0.06
Leadership	0.07	0.07	-0.06	0.07	0.08	0.05
Teamwork	0.06	0.08	-0.07	0.06	0.07	0.04
Communication	0.01	0.04	0.04	0.01	0.00	0.01

Notes: This table shows all the pair-wise correlations between post-period social skill indices and labor market outcomes.

Table A.3: Enrollment first stage

	Control	Treatment - control	Social - tech. difference	Stipend - no stipend difference
Enrolled	0.12 ***	0.60 ***	0.03	0.06
	(0.02)	(0.03)	(0.04)	(0.07)
Course/Stratification FE	No	Yes	Yes	Yes
Observations	212	663	451	451

Notes: The table reports the effect of treatment on enrollment. All comparisons are within stratification group. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.4: Who enrolls?

	Treatment mean	Predictors of enrollment
Male	0.37	0.01
	(0.02)	(0.03)
Age	25.96	-0.18
	(0.28)	(0.63)
Years of education	11.30	-0.02
	(0.08)	(0.17)
Black	0.56	-0.05
	(0.02)	(0.05)
Mestizo	0.16	-0.01
	(0.02)	(0.04)
Indigenous	0.02	-0.01
	(0.01)	(0.02)
Disability	0.02	0.01
	(0.01)	(0.01)
Primary education	0.98	0.01
	(0.01)	(0.01)
Secondary education	0.92	-0.01
	(0.01)	(0.03)
Technical higher education	0.31	0.05
	(0.02)	(0.05)
Professional higher education	0.03	-0.01
	(0.01)	(0.02)
Enrolled in school	0.06	0.05 *
	(0.01)	(0.03)
Using Public Employment Service	0.33	-0.03
	(0.02)	(0.05)
Household size	4.55	0.03
	(0.08)	(0.18)
HH income per day (USD)	22.08	6.22
	(3.35)	(7.42)
HH with electricity	0.99	-0.00
	(0.00)	(0.01)
HH with water	0.99	-0.01
	(0.00)	(0.01)
HH with sanitation	0.97	-0.03
	(0.01)	(0.02)
Joint significance		F-test = 1.21
		p-val = 0.25
Course/Stratification FE	No	Yes
Observations	451	451

Notes: The table reports the treatment mean and differences between those who enroll and graduate compared to the overall treated group, along with standard errors. All comparisons within treatment are within stratification group. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.5: ITT estimates with and without course FE (Survey data)

	Treatment vs. control		Treatment 1: Soc. vs. control		Treatment 2: Tech. vs. control	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Labor market outcomes						
Employed	0.08**	0.09**	0.07	0.08	0.10**	0.10**
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
With contract	0.14***	0.14***	0.10***	0.11***	0.17***	0.17***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Casual worker	-0.15***	-0.16***	-0.15***	-0.16***	-0.16***	-0.16***
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Days worked per month	2.52**	2.73**	2.09*	2.28*	3.03**	3.17***
	(1.04)	(1.06)	(1.17)	(1.21)	(1.20)	(1.21)
Hours worked per week	4.58**	4.98**	3.41	3.76	5.87**	6.17**
	(2.07)	(2.11)	(2.32)	(2.38)	(2.41)	(2.43)
Wage per hour (USD)	-0.00	0.01	-0.00	0.01	-0.00	0.01
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
Monthly earnings	4.96	6.95	2.91	4.46	7.53	9.38
	(8.06)	(8.26)	(9.39)	(9.64)	(9.45)	(9.61)
Panel B: Social skills						
Work ethic	0.01	0.01	-0.03	-0.03	0.05	0.05
	(0.04)	(0.04)	(0.05)	(0.05)	(0.05)	(0.05)
Organizational	0.04*	0.04*	0.03	0.03	0.04*	0.04*
	(0.02)	(0.02)	(0.03)	(0.02)	(0.02)	(0.02)
Interpersonal	0.07	0.08	0.03	0.03	0.12*	0.12*
	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)	(0.06)
Leadership	0.06	0.06	0.06	0.07	0.06	0.06
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Teamwork	0.03	0.03	0.06	0.06	0.00	0.01
	(0.06)	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)
Communication	0.08*	0.09*	0.07	0.07	0.10*	0.10*
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)	(0.06)
Controls						
Baseline demographics	No	No	No	No	No	No
Course/Stratification FE	Yes	No	Yes	No	Yes	No
Pre-treatment outcome	No	No	No	No	No	No
Days from graduation	No	No	No	No	No	No
Observations	663	653	434	429	441	432

Notes: Columns 1, 3, and 5 report differences between outcomes of treated and untreated groups from regressions that only contain a group identifier and stratification fixed effects. For comparison, Columns 2, 4, and 6 report differences for the same set of outcomes from regressions without group identifiers. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.6: ITT estimates (Survey data): FDR q-values

	Any treatment-control			Social treatment-control			Technical treatment-control		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Panel A: Labor market outcomes									
Employed	0.07*	0.07	0.07	0.06	0.05	0.05	0.09**	0.08*	0.09*
	(0.04)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.05)	(0.06)	(0.06)
	653	653	653	429	429	429	432	432	432
With contract	0.13***	0.12*	0.12**	0.10**	0.06	0.06	0.16***	0.17***	0.17***
	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)
	653	653	653	429	429	429	432	432	432
Casual worker	-0.15***	-0.15*	-0.15**	-0.14**	-0.15	-0.15	-0.15***	-0.15**	-0.15**
	(0.04)	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
	653	653	653	429	429	429	432	432	432
Days worked per month	2.25**	2.15	2.24	1.86	0.64	0.66	2.83**	4.13**	4.24**
	(1.04)	(1.42)	(1.41)	(1.18)	(1.52)	(1.52)	(1.22)	(1.64)	(1.63)
	651	632	632	429	420	420	430	414	414
Hours worked per week	4.17**	4.31	4.50	3.15	3.03	3.06	5.56**	6.40**	6.63**
	(2.07)	(2.82)	(2.80)	(2.32)	(3.02)	(3.02)	(2.43)	(3.26)	(3.25)
	650	631	631	428	419	419	430	414	414
Wage per hour (USD)	-0.00	-0.35	-0.35	0.00	-0.99	-0.98	0.00	0.30	0.28
	(0.05)	(0.61)	(0.61)	(0.06)	(0.83)	(0.83)	(0.06)	(0.52)	(0.52)
	650	607	607	428	402	402	430	397	397
Monthly earnings	3.98	3.36	3.75	3.25	-2.33	-2.42	6.28*	10.36	10.85
	(8.12)	(9.77)	(9.77)	(9.47)	(11.76)	(11.78)	(9.58)	(10.37)	(10.38)
	650	607	607	428	402	402	430	397	397
Panel B: Social outcomes									
Work ethic	0.02	0.01	0.01	-0.03	-0.00	-0.00	0.07	0.03	0.02
	(0.04)	(0.06)	(0.06)	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
	653	653	653	429	429	429	432	432	432
Organizational	0.04	0.06	0.06	0.04	0.06	0.06	0.04	0.06	0.06
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)	(0.03)	(0.03)
	653	653	653	429	429	429	432	432	432
Interpersonal	0.09	0.04	0.04	0.05	0.02	0.02	0.12	0.08	0.07
	(0.06)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)	(0.07)	(0.08)	(0.08)
	653	653	653	429	429	429	432	432	432
Leadership	0.07	0.04	0.04	0.07	0.07	0.07	0.07	0.02	0.02
	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.05)	(0.07)	(0.07)
	653	653	653	429	429	429	432	432	432
Teamwork	0.04	-0.04	-0.04	0.07	0.00	-0.00	0.02	-0.06	-0.06
	(0.06)	(0.08)	(0.08)	(0.07)	(0.09)	(0.09)	(0.07)	(0.09)	(0.09)
	653	653	653	429	429	429	432	432	432
Communication	0.06	0.08	0.08	0.06	0.16	0.16	0.06	0.01	0.01
	(0.05)	(0.06)	(0.06)	(0.06)	(0.07)	(0.07)	(0.06)	(0.07)	(0.07)
	653	653	653	429	429	429	432	432	432
Controls									
Baseline demographics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Days from graduation	No	No	Yes	No	No	Yes	No	No	Yes

Notes: Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Notes: Columns 1 report item-level differences between outcomes of treated and untreated groups from regressions that only contain baseline measures, a group identifier and stratification fixed effects. Columns 2 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, and pre-treatment outcome measures. Columns 3 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date.Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.7: ITT estimates - Mean-based indices (Survey data)

	Treatment vs. control		Treatment 1: Soc. vs. control		Treatment 2: Tech. vs. control	
	(1)	(2)	(3)	(4)	(5)	(6)
	Mean-based social skills indices					
Work ethic	0.02	0.02	-0.00	0.02	0.04	0.03
	(0.02)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
Organizational	0.11*	0.20**	0.08	0.18*	0.13**	0.22**
	(0.06)	(0.08)	(0.07)	(0.10)	(0.07)	(0.09)
Interpersonal	0.04	0.02	0.02	-0.00	0.06**	0.04
	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)
Leadership	0.06	0.03	0.06	0.05	0.06	0.01
	(0.03)	(0.05)	(0.04)	(0.06)	(0.04)	(0.05)
Teamwork	0.02	-0.14	0.03	-0.10	0.02	-0.15
	(0.09)	(0.13)	(0.11)	(0.16)	(0.11)	(0.14)
Communication	0.06*	0.07	0.06	0.13**	0.07*	0.01
	(0.04)	(0.05)	(0.04)	(0.06)	(0.04)	(0.05)
Controls						
Baseline demographics	No	Yes	No	Yes	No	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	No	Yes	No	Yes	No	Yes
Days from graduation	No	Yes	No	Yes	No	Yes
Observations	663	653	434	429	441	432

Notes: Columns 1, 3, and 5 report item-level differences between outcomes of treated and untreated groups from regressions that only contain a group identifier and stratification fixed effects. Columns 2, 4, and 6 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.8: Item-level ITT estimates (Survey data), part I

	Treatment vs. control		Treatment 1: Soc. vs. control		Treatment 2: Tech. vs. control	
	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Work ethic					
I start what I finish	0.04	0.07	0.03	0.08	0.06	0.07
	(0.04)	(0.05)	(0.04)	(0.06)	(0.04)	(0.05)
I finish chores	-0.03	-0.01	-0.06	-0.01	-0.01	-0.00
	(0.04)	(0.06)	(0.04)	(0.07)	(0.04)	(0.07)
I start things early	0.05	0.01	0.03	0.00	0.07*	0.02
	(0.04)	(0.05)	(0.05)	(0.07)	(0.04)	(0.06)
	Panel B: Organizational					
I am organized	0.11*	0.20**	0.08	0.18*	0.13**	0.22**
	(0.06)	(0.08)	(0.07)	(0.10)	(0.07)	(0.09)
	Panel C: Interpersonal					
I can put myself in others' shoes	0.07	0.01	0.04	0.01	0.11	0.03
	(0.06)	(0.08)	(0.07)	(0.10)	(0.07)	(0.09)
I am self-conscious in front of others	-0.06	-0.03	-0.05	-0.03	-0.06	-0.03
	(0.05)	(0.07)	(0.06)	(0.09)	(0.06)	(0.08)
I know how to behave in situations	-0.02	0.00	-0.04	-0.01	0.00	0.01
	(0.04)	(0.05)	(0.05)	(0.06)	(0.04)	(0.05)
I make myself available	0.10	0.07	0.04	0.01	0.17**	0.13
	(0.06)	(0.09)	(0.08)	(0.11)	(0.07)	(0.10)
I understand gestures	0.06	-0.05	0.01	-0.09	0.12*	-0.02
	(0.06)	(0.08)	(0.07)	(0.09)	(0.06)	(0.09)
I can adapt to situations	0.08*	0.10*	0.11**	0.10	0.04	0.10
	(0.04)	(0.05)	(0.05)	(0.06)	(0.05)	(0.07)
Controls						
Baseline demographics	No	Yes	No	Yes	No	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	No	Yes	No	Yes	No	Yes
Days from graduation	No	Yes	No	Yes	No	Yes
Observations	663	653	434	429	441	432

Notes: Columns 1, 3, and 5 report item-level differences between outcomes of treated and untreated groups from regressions that only contain a group identifier and stratification fixed effects. Columns 2, 4, and 6 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels (* = 0.10, ** = 0.05, *** = 0.01).

Table A.9: Item-level ITT estimates (Survey data), part II

	Treatment vs. control		Treatment 1: Soc. vs. control		Treatment 2: Tech. vs. control	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel D: Leadership						
I can motivate others	0.03	-0.11	-0.01	-0.13	0.08	-0.10
	(0.06)	(0.08)	(0.07)	(0.10)	(0.06)	(0.08)
I can control my impulses	0.07	0.07	0.12*	0.11	0.03	0.04
	(0.06)	(0.08)	(0.07)	(0.10)	(0.07)	(0.09)
I know how to present myself to others	0.06	0.14**	0.05	0.16**	0.06	0.11
	(0.04)	(0.06)	(0.05)	(0.07)	(0.05)	(0.07)
Panel E: Teamwork						
I am prompt	0.08	-0.13	0.08	-0.07	0.08	-0.16
	(0.13)	(0.17)	(0.15)	(0.20)	(0.14)	(0.19)
I enjoy working with others	-0.01	-0.05	0.03	-0.09	-0.06	0.02
	(0.12)	(0.16)	(0.14)	(0.19)	(0.13)	(0.18)
I pay attention to who is speaking	0.00	-0.20	-0.03	-0.05	0.05	-0.35
	(0.16)	(0.21)	(0.19)	(0.27)	(0.18)	(0.24)
Panel F: Communication						
I can follow conversations	0.08	0.15**	0.11*	0.28***	0.05	0.01
	(0.05)	(0.07)	(0.06)	(0.09)	(0.06)	(0.08)
I think before I speak	0.08	0.07	0.04	0.09	0.12**	0.05
	(0.05)	(0.07)	(0.06)	(0.08)	(0.06)	(0.08)
I pay attention to who is speaking	0.00	-0.20	-0.03	-0.05	0.05	-0.35
	(0.16)	(0.21)	(0.19)	(0.27)	(0.18)	(0.24)
Controls						
Baseline demographics	No	Yes	No	Yes	No	Yes
Course/Stratification FE	Yes	Yes	Yes	Yes	Yes	Yes
Pre-treatment outcome	No	Yes	No	Yes	No	Yes
Days from graduation	No	Yes	No	Yes	No	Yes
Observations	663	653	434	429	441	432

Notes: Columns 1, 3, and 5 report item-level differences between outcomes of treated and untreated groups from regressions that only contain a group identifier and stratification fixed effects. Columns 2, 4, and 6 report differences for the same set of outcomes from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels (* = 0.10, **= 0.05, *** = 0.01).

Table A.10: Social vs. technical treatment: Social skills using mean-based indices

	Tech. treatment baseline mean	Soc.-tech. baseline dif.	Specification (1)	Specification (2)
	Mean-based social skills indices			
Work ethic	3.84	-0.04	0.02	0.01
	(0.02)	(0.02)	(0.04)	(0.04)
Organizational	3.67	-0.05	-0.04	-0.03
	(0.04)	(0.07)	(0.10)	(0.10)
Interpersonal	3.53	-0.05	-0.04	-0.04
	(0.02)	(0.03)	(0.04)	(0.04)
Leadership	3.47	-0.00	0.06	0.04
	(0.03)	(0.04)	(0.05)	(0.05)
Teamwork	5.18	0.02	0.10	0.07
	(0.07)	(0.10)	(0.14)	(0.14)
Communication	3.51	-0.01	0.11 **	0.11 **
	(0.03)	(0.04)	(0.05)	(0.05)
Controls				
Baseline demographics	No	No	No	Yes
Course/Stratification FE	No	Yes	Yes	Yes
Pre-treatment outcome	No	No	Yes	Yes
Days from graduation	No	No	No	Yes
Observations	229	451	451	445

Notes: After reporting baseline means for the technical treatment group and item-level baseline difference between the social and technical group, column 1 reports post-period differences from a regression including only group identifiers course-stratification fixed-effects, and column 2 reports results from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels. Significance levels (* = 0.10, ** = 0.05, *** = 0.01).

Table A.11: Social vs. technical treatment: Social skills at the item level

	Technical treatment baseline mean	Social-technical baseline dif.	Specification (1)	Specification (2)
		Panel A: Work ethic		
I start what I finish	3.83	-0.03	0.03	0.02
	(0.02)	(0.04)	(0.05)	(0.05)
I finish chores	3.81	-0.04	0.03	0.02
	(0.03)	(0.04)	(0.07)	(0.07)
I start things early	3.87	-0.04	0.00	-0.00
	(0.02)	(0.04)	(0.06)	(0.06)
		Panel B: Organizational		
I am organized	3.67	-0.05	-0.04	-0.03
	(0.04)	(0.07)	(0.10)	(0.10)
		Panel C: Interpersonal		
I can put myself in others' shoes	3.38	-0.07	0.01	-0.01
	(0.05)	(0.07)	(0.10)	(0.10)
I am self-conscious in front of others	3.50	0.01	-0.01	0.00
	(0.04)	(0.06)	(0.09)	(0.09)
I know how to behave in situations	3.80	-0.04	-0.04	-0.03
	(0.03)	(0.04)	(0.05)	(0.06)
I make myself available	3.28	-0.13*	-0.10	-0.10
	(0.05)	(0.07)	(0.10)	(0.10)
I understand gestures	3.49	-0.12*	-0.09	-0.08
	(0.04)	(0.06)	(0.09)	(0.09)
I can adapt to situations	3.71	0.07	0.00	-0.00
	(0.04)	(0.05)	(0.06)	(0.06)
		Panel D: Leadership		
I can motivate others	3.34	-0.08	0.00	0.00
	(0.04)	(0.06)	(0.09)	(0.09)
I can control my impulses	3.35	0.08	0.12	0.08
	(0.04)	(0.06)	(0.09)	(0.09)
I know how to present myself to others	3.73	-0.01	0.05	0.05
	(0.03)	(0.04)	(0.07)	(0.07)
		Panel E: Teamwork		
I am prompt	5.52	-0.00	0.10	0.08
	(0.10)	(0.14)	(0.19)	(0.19)
I enjoy working with others	5.30	0.11	-0.02	-0.11
	(0.09)	(0.13)	(0.18)	(0.18)
I pay attention to who is speaking	4.71	-0.06	0.30	0.31
	(0.12)	(0.18)	(0.24)	(0.24)
		Panel F: Communication		
I can follow conversations	3.55	0.06	0.28 ***	0.25 ***
	(0.04)	(0.06)	(0.08)	(0.08)
I think before I speak	3.65	-0.08	0.03	0.02
	(0.04)	(0.06)	(0.08)	(0.08)
I pay attention to who is speaking	4.71	-0.06	0.30	0.31
	(0.12)	(0.18)	(0.24)	(0.24)
Controls				
Baseline demographics	No	No	No	Yes
Course/Stratification FE	No	Yes	Yes	Yes
Pre-treatment outcome	No	No	Yes	Yes
Days from graduation	No	No	No	Yes
Observations	229	451	451	445

Notes: After reporting baseline means for the technical treatment group and item-level baseline difference between the social and technical group, column 1 reports post-period differences from a regression including only group identifiers course-stratification fixed-effects, and column 2 reports results from regressions including group identifiers, baseline demographic measures, stratification fixed effects, pre-treatment outcome measures, and days from the intended program graduation date. Significance levels. Significance levels (* = 0.10, **= 0.05, *** = 0.01).